

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2298.—VOL. XLIX.

LONDON, SATURDAY, SEPTEMBER 6, 1879.

WITH SUPPLEMENT. PRICE SIXPENCE PER ANNUM, BY POST, 11 1/2

**MR. JAMES H. CROFTS, STOCK AND SHARE BROKER
AND MINING SHARE DEALER,
No. 1, FINCH LANE, CORNHILL, LONDON, E.C.
ESTABLISHED 1842.**

BUSINESS transacted in all descriptions of MINING Stocks and Shares (British and Foreign), Consols, Banks, Bonds (Foreign and Colonial), Railways, Insurance, Assurance, Telegraph, Tramway, Shipping, Canal, Gas, Water, and Dock Shares, and all Miscellaneous Shares.

BUSINESS negotiated in Stocks and Shares not having a general market value.
Every Friday a general and reliable List issued (a copy of which will be forwarded regularly on application), containing closing prices of the week.

MINES INSPECTED.

BANKERS: CITY BANK, LONDON; SOUTH CORNWALL BANK, ST. AUSTELL.

SPECIAL DEALINGS in the following, or part:—

100 Cambrian, offer wid.	20 Leadhills, £2 5s.	5 Santa Barbara, £1 17 6
20 Colorado, £1 15s	5 Llanidloes, 10s.	15 Tankerville, £3 1/2
10 Cwm Brwyno, 21s.	10 Red Rock, 7s. 6d.	30 Van Consoles and Glyn
20 East Van, £1 5s.	20 Morfa Du, 16s. 6d.	Amalgamated, 5s.
10 Eberhardt, £2 1/4	100 Pestarena, 4s.	20 W. Assheton, 17s. 6d.
25 Frinton, £2 1/2	25 Parys Corporation, 20s.	25 Wye Valley, 20s.
25 Herodsfoot, £2 1/4	100. 6d.	10 West Chiverton, all
250 Javali, 7s. 6d.	100 Penrithal, 1s. 3d.	calls paid, £2 1/4
	10 Richmond, 48 2s. 6d.	

* SHARES SOLD FOR FORWARD DELIVERY (ONE, TWO, OR THREE MONTHS ON DEPOSIT OF TWENTY PER CENT.)

RAILWAYS—SPECIAL BUSINESS.

FOREIGN BONDS—SPECIAL BUSINESS.

Fortnightly accounts opened on receipt of the usual cover.

JAMES H. CROFTS, 1, FINCH LANE LONDON.

ESTABLISHED 1842.

**MR. W. H. BUMPUS, STOCK AND SHARE BROKER,
AND
MINING SHARE DEALER,
44, THREADNEEDLE STREET, LONDON, E.C.
ESTABLISHED 1867.**

BUSINESS transacted in STOCK EXCHANGE SECURITIES and MISCELLANEOUS SHARES of every description.
RAILWAYS, BANKS, FOREIGN AND COLONIAL BONDS, TRAMWAYS, TELEGRAPHS, and all the LEADING INVESTMENTS.
Accounts opened for the Fortnightly Settlement.
A Stock and Share List free on application.

Mr. BUMPUS has SPECIAL BUSINESS in the undermentioned:—

50 Almada, 7s.	50 Frongoch.	150 Port Phillip, 10s.
25 Blue Tent, £2.	30 Frontino, £2 6s. 3d.	60 Parys Copper, 11s.
100 Bodidra.	70 Glenroy, 10s. 6d.	25 Richmond, £3 1/2
5 Cape Copper, £2 1/4	5 St. Lasey, £1 10 1/4	50 Ruby & Dunderberg.
50 Colorado, 33s. 6d.	15 Great Holway.	15 Roman Grav., £2 1/2
20 Chapel House.	20 Herodsfoot, £2 1/4	5 So. Conduffur, £1 1/2
75 Chontales, 6s.	40 Hultafall.	50 Santa Barbara.
2 Carn Brea, £3 1/2	50 Kapanga, 5s. 6d.	10 So. Frances.
40 Canada, 39s.	30 Leadhills.	15 Tankerville, £3.
25 Devon Consols, 39s.	25 Mellanear, £2 8s. 9d.	5 Van, £1 1/2
50 Don Pedro, 12s.	100 Morfa Du, 16s. 6d.	48 West Holway.
5 Dolcoath, £2 1/2	50 Marke Valley, 13s. 6	20 Wheel Grenville, £4 1/2
5 East Ford.	150 Nouveau Monde.	15 Wh. Peavor.
25 Eberhardt, £2 3s. 6d.	20 New Quebrada, 43s.	25 West Peavor, £3 1/4
20 East Van, 21s.	200 Pestarena, 4s. 6d.	

IMPORTANT TO INVESTORS.

TIN is again rising, and the improvement is likely to continue. Shares in SOUND Tin Mines may now be bought with advantage, and an investment at present prices will, in all probability, show very profitable results before the end of the year. The following are particularly recommended:—Wheal Peavor, South Wheal Frances, South Conduffur, East Ford, Wheal Grenville, Wheal Jane, and West Peavor.

SPECIAL BUSINESS, at close prices, in the SHARES of all the principal HOME and FOREIGN MINES.

A complete and reliable List of all the Leading Investments (published on the first of each month) may be obtained free on application to

WILLIAM HENRY BUMPUS, SWORN BROKER.

Offices: 44, Threadneedle Street, London, E.C.

BANKERS—THE NATIONAL PROVINCIAL BANK OF ENGLAND, E.C.

**MESSRS. JONES AND HOUSTON, 25, CROSBY HALL
CHAMBERS, LONDON, E.C.
STOCK AND SHARE DEALERS AND
GENERAL MINING AGENTS.**

SPECIAL BUSINESS in the following Shares, which we can honestly and boldly recommend either to hold for dividends or a great rise in market value:—
BRYN GLAS.
DON PEDRO.
PANT-Y-MWYN.

We strongly recommended in last week's Journal the immediate purchase of DON PEDRO and BRYN GLAS. The former have had a considerable rise, and will no doubt go to double their present price immediately, and the latter is considered to be one of the best mining investments of the day. An important fresh discovery has just been made at the Pant-y-mwyn Mine.

Bankers: London and Provincial.

**MR. E. J. BARTLETT, BRITISH AND FOREIGN STOCK
AND SHARE DEALER,
No. 39, GREAT ST. HELEN'S, LONDON, E.C.**

Just out.

"HOW TO INVEST," post free, One Shilling, Twelfth Edition, enlarged.

NOTICE OF REMOVAL.

**MR. THOMAS THOMPSON, JUN., STOCK BROKER,
has REMOVED from 1, Palmerston Buildings, Bishopsgate Street, to
16, ST. SWITHIN'S LANE, E.C.**

Mr. THOMPSON transacts business in every species of Stock Exchange and Mining Securities.
Mr. THOMPSON affords reliable information to investors, and can give, when desired, a list of first-class Stocks and Shares, yielding 4 to 10 per cent. dividends upon present prices.
Mr. THOMPSON's weekly Circular may be had on application.

JOHN B. REYNOLDS, 37, WALBROOK, LONDON, E.C.
Business transacted in all kinds of Stocks and Shares at net prices—prompt cash.
Mr. R. points with satisfaction to his recommendation of WHEAL PEAVOR shares at 22 per share, and has special information respecting this mine and WEST PEAVOR.
(Established Twenty Years.)
Bankers—London and South-Western Bank (Limited).

**MR. T. E. W. THOMAS, STOCK AND SHARE DEALER,
3, GREAT WINCHESTER STREET, E.C.**
SPECIAL BUSINESS in the following:—
40 Chapel House, £1 2 1/4
50 Don Pedro, 12s. 6d.
5 East Van, 17s. 6d.
5 East Van, £1 1/4
25 Flagstaff, 5s.
15 Gt. Holway.
10 Van Consoles and Glyn
United, 5s. 9d.
50 Herodsfoot, £2 5s.
20 Hultafall.
20 Leadhills, £2 3s. 9d.
20 Morfa Du, 15s. 6d.
25 Parys Copper, 10s. 3d.
10 Richmond, 47 18 9
25 Tamar Silver-Lead.
20 West Peavor, £3 5s

DON PEDRO still recommended for a rise.

HOME MINES—LEAD, TIN, AND COPPER.

BRITISH LEAD, TIN, and COPPER, having been lower in price than ever known, it is at last satisfactory to observe an upward tendency. The general feeling is that these METALS will now continue to rise in price.

Most of our HOME LEADING DIVIDEND and PROGRESSIVE LEAD, COPPER, and TIN MINE SHARES are now at a mere NOMINAL figure, and we strongly recommend an immediate purchase in many of them. A List of which can be had on application.

MESSRS. PETER WATSON AND CO.,
54, OLD BROAD STREET, LONDON, E.C.

UNITED STATES AND COLONIAL MINES.

IMPORTANT INFORMATION REGARDING THE ABOVE.

BUYER and SELLER of SHARES at the close Market Price of the day. SHAREHOLDERS and INVESTORS may rely on all business being punctually and faithfully carried out.

A DAILY LIST OF PRICES sent (free) on application, either personally or by post.

BANKERS: THE ALLIANCE BANK (Limited).
MESSRS. PETER WATSON AND CO.,
54, OLD BROAD STREET, LONDON, E.C.

BRITISH AND FOREIGN MINES.

SHAREHOLDERS and INVESTORS desirous of PURCHASING or SELLING SHARES in COPPER, TIN, LEAD, GOLD, or SILVER MINES can do so at market prices, and obtain information regarding the same on personal application, or by letter, of—

MESSRS. PETER WATSON AND CO.,
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Telegraphic Messages punctually attended to.

STOCK AND SHARE MARKETS.

Prices of STOCKS and SHARES in RAILWAYS, BANKS, ENGLISH and FOREIGN GOVERNMENT SECURITIES, GAS, MINES, INSURANCE, and other Stock Exchange Securities, and various important information telegraphed instantaneous from the STOCK AND SHARE MARKETS direct into the offices of—

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BEST ADVICE as to selection of MINE SHARES for LARGE PROFITS.

STOCK EXCHANGE business done promptly on best terms.

ALFRED E. COOKE,

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(ESTABLISHED 1853.)

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FOREIGN BONDS, TELEGRAPHS, TRAMWAYS, RAILWAYS, AND
OTHER LEADING SECURITIES.

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(Established 1848.)**

SPECIAL BUSINESS in BRITISH and FOREIGN MINES.

BANKERS: LONDON AND WESTMINSTER.

**FERDINAND R. KIRK, 5, BIRCHIN LANE,
LONDON, E.C.**

FORTNIGHTLY ACCOUNTS opened, on receipt of the usual "cover," in Railways Home and Foreign, Mining Shares, Foreign Bonds, and certain Miscellaneous Securities.

"THE WEEK."—A SEPARATE EDITION from that which appears in the Mining Journal is published every Wednesday evening, containing "Notes and Hints on the Stock Markets," with Closing Prices. May be had on application.

Bankers: London and Westminster, Lothbury.

**WILLIAM GABBOTT, STOCK AND SHARE DEALER,
8, DRAPEY'S GARDENS, LONDON, E.C.**

Bankers: The National Provincial Bank of England.

**MR. W. MARLBOROUGH, STOCK AND SHARE DEALER,
29, BISHOPSGATE STREET, LONDON, E.C.**

Can SELL the following SHARES at prices annexed:—
100 Almada, 5s. 9d.
50 Chontales, 6s. 6d.
20 Eberhardt, £2 3s. 9d.
East Lovell, 30s.
25 Flagstaff, 5s.
25 Leadhills, £2 1/4
25 Herodsfoot, £2 5s. 6d.
20 Nouveau Monde, 16s
20 Great Holway.
60 Don Pedro, 12s. 6d.
East Caradon, 8s. 6d.
75 N. Zealand Kapanga, 4s. 6d.
20 Pestarena, 4s. 9d.
25 Morfa Du, 15s. 6d.
10 Richmond, £2.
10 Hornachos, £7.
25 South Warren, 27s.
5 Van, £1 1/2
10 Minera, 9 1/2
50 Tamar Silver-Lead.
Parys Corporation, 10s. 6d.
50 York Peninsula pref, 10s. 3d.
100 ditto ordin., 3s 3d
10 Tankerville, £3 5s.
50 Victoria (London) Mining Co., 9s. 3d.
20 Wheel Crebor, £4 7s 6
3 W. Chiverton, £2 12 6

**MESSRS. J. TAYLOR AND CO.,
MINING ENGINEERS AND INSPECTORS,
86, LONDON WALL, LONDON, E.C.**

Have Agents in England, Scotland, Wales, and on the Continent.

**MESSRS. ENDEAN AND CO., 85, GRACECHURCH STREET
LONDON, E.C., STOCK AND SHARE DEALERS.**

Established in 1861.
Bankers: Barclay, Bevan, and Co.; and London and Westminster Bank. Lothbury.

**MR. JOHN L. M. FRASER
(Fourteen years at the Great Minera Mines),
CONSULTING MINING ENGINEER—SECRETARY AND AUDITOR—
ROYALTY AND MINERAL ESTATE AGENT—SHARE DEALER.
MINES, MINERALS, AND MACHINERY BROKER,
GREENFIELD HOUSE, WREXHAM.**

BONA FIDE INVESTMENTS.
The most reliable information concerning certain rich Lead and Blende Mines that will soon double their present prices. Full particulars on application. Parties requiring valuable Mine and Colliery Leases should apply at once, as they are rapidly rising in value. All descriptions of Mining Machinery at low prices.

**MR. DAVID COWAN,
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Investigations, Reports, and Valuations made of Coal, Iron, Slate, Pyrites, and other properties at home and abroad. Enquiries for Road and Railway Materials, Mining Plant, Pipes, Castings, &c. Plans, &c., of the most modern and economical mining appliances, fittings, and arrangements.
I have been long acquainted with the principal Coal and Ironworks in the North, with the Slate Quarries in North Wales, and for many years was Chief Engineer of the Tharsis Mines, Works, and Railway in Spain.

**THE "DIFFERENTIAL" PUMPING ENGINE
(DAVEY'S PATENT),**

FOR
DRAINING MINES, WATER SUPPLY OF TOWNS, IRRIGATION,
SUPPLYING DOCKS, PUMPING SEWAGE, and GENERAL
PUMPING PURPOSES.

HATHORN, DAVEY, AND CO.,
LEEDS.

HATHORN, DAVEY, and Co. have Patterns of "Differential" Engines of all sizes, from 5 to 500 horse power, and have facilities for supplying very powerful Engines and Pumps at a short notice.

See Illustrated Advertisement every alternate week.

**MR. CHARLES THOMAS,
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**MR. ALFRED THOMAS,
MINING AGENT, AND STOCK AND SHARE DEALER,
10, COLEMAN STREET, LONDON, E.C.**

"HOW TO TAKE ADVANTAGE OF THE COMING RISE IN PRICES."
By ALFRED THOMAS, 10, Coleman Street, E.C.
Will be forwarded to Investors upon application.

**MR. EDWARD ASHMEAD, 62, CORNHILL, LONDON,
LONDON MINE AGENT, ACCOUNTANT, AND AUDITOR.**

TO INVESTORS, SHAREHOLDERS, TRUSTEES.
SAFE DIVIDEND INVESTMENTS PAYING 4 TO 6 AND 8 PER CENT.
PER ANNUM ON PRESENT OUTLAY.

**SHARP'S INVESTMENT CIRCULAR,
ISSUED MONTHLY (post free), is a "SAFE GUIDE."
The following INVESTMENTS are SAFE, and PAY WELL:—**

NAME OF STOCK, SHARE, &c.	Price per Share. About.	Interest at present price.	Dividends payable.
Portuguese 3 per cent. Stock	£ 51 10	25 16 6	Jan., July
Italian Maremma Railway, 5 per cent.	51 10	5 4 4	Do
New York Central and Hudson River 7 p.c. Mort.	128 0	5 9 5	Do
Baltimore and Ohio 6 per cent. Sterling Bonds.	111 10	5 7 4	Mar., Sep.
Illinois Central 6 per cent. Sterling Bonds	115 10	5 3 11	Apr., Oct.
Pennsylvania General Mortgage 6 per cent.	116 10	5 3 0	Jan., July
United New Jersey Rail. and Canal 6 p.c. Sterling	112 10	5 5 8	Mar., Sep.
Bank of Australasia, £40 shares	74 10	6 14 0	Apr., Oct.
Bank of New South Wales, £20 shares	54 10	6 5 5	May, Nov.
Bank of New Zealand, £10 shares	21 10	6 19 6	Do
City, £20 shares, £10 paid up	13 10	7 5 6	Jan., July
Eng. Bank of Rio de Janeiro, £20 sh., £10 pd.	125 0	6 1 7	Jan., Dec.
London Chartered of Australia, £20 sh.	23 0	6 19 2	Do
Commercial Gas, £100 Stock	181 10	5 15 8	Apr., Oct.
Gas Light and Coke, "A" £100 Stock	175 10	6 19 8	Feb., Aug.
Imperial Continental, £100 Stock	173 0	6 7 2	June, Dec.
Atlantic and St. Lawrence Railway 6 p.c.	113 10	5 5 9	Mar., Sep.
Buffalo and Lake Huron 5 1/2 p.c. 2nd Mortgage.	101 10	5 9 5	Do
Demerara 7 per cent. Perpetual Preference	126 10	5 1 8	Apr., Oct.
International Bridge 6 per cent. 1st Mortgage	105 10	5 13 9	Jan., July
Scottish-Australian Investment £100 Stock	185 0	6 1 7	May, Nov.
London General Omnibus £100 Stock	194 0	6 8 6	Quarterly
Dublin Tramways, £10 shares	11 15	5 10 8	Feb., Aug.
Liverpool United, £10 shares	11 0	6 7 3	Do
Eley Brothers, £10 shares	30 0	6 13 4	Jan., July
Fore Street Warehouse, £16 sh., £14 paid	19 10	5 0 0	Do
Poster, Porter, and Co., £15 sh., £10 10s. pd.	16 0	5 14 10	Do
Liebig Extract £20 sh. (ex bonus shares). All paid	28 10	7 0 4	Do
Rio de Janeiro City Improvements, £25 sh. All paid	27 0	6 0 4	Apr., Oct.
Assam Tea, £20 shares, £20 paid up	66 0	8 3 8	Jan., July
Johannesburg Tea, £20 shares	40 0	7 10 0	May, Nov.
Australian Mt. Land & Finance, £25 sh., £5 pd.	10 0	7 10 0	Feb., Aug.
National Discount, £25 shares, £5 pd.	9 10	5 15 9	Do
New Zealand Trust and Loan, £25 sh., £5 pd.	10 0	6 10 0	May, Nov.
Trust and Loan of Canada, £20 sh., £5 pd.	7 10	6 5 0	June, Dec.
London Steamboat, £5 shares	6 5	8 0 0	Do
Peninsular and Oriental, £50 shares	48 0	6 9 5	Do
Union Steamship, £20 shares	27 10	8 3 8	Apr., Oct.
Anglo-American Telegraph Preferred, £100 Stock	52 10	7 6 4	Quarterly
Eastern 6 p.c. Debentures, £100 Stock	107 10	5 11 7	Apr., Oct.
Eastern 6 p.c. Preference, £100	12 0	5 0 0	Quarterly
Submarine, £10 Stock	225 0	7 15 7	Mar., Sep.
British Equitable Life, £100 shares, £10 paid.	18 0	6 0 0	Jan., July
Thames and Mersey Marine, £20 sh., £2 pd.	8 0	6 17 6	Do
Cagliari Gas and Water, £20 shares	17 0	7 2 11	Apr., Oct.

**SHARP'S INVESTMENT CIRCULAR,
ISSUED MONTHLY.**

The SEPTEMBER EDITION READY (post free), contains information upon all Stock and Share Investments, also British and Foreign Mines, &c., &c.

**SHARP'S INVESTMENT CIRCULAR
SHOULD BE CONSULTED BY ALL STOCK AND SHARE HOLDERS.**
It is the most trustworthy and Reliable Publication of the day, and has a large circulation throughout the United Kingdom.

IT CONTAINS THE SAFE INVESTMENTS IN THE FOLLOWING:—

English, Foreign Railways.	Insurance, Gas, Waterworks.
Preference, Debenture Stocks.	Colonial, Foreign Stocks.
Indian, American Stocks.	British, Foreign, Colonial Mines.
Bank, Financial, Shares.	Tea and Land Shares.
Tramway, Telegraph Shares.	Shipping, Dock Shares.
Municipal Bonds.	Miscellaneous Shares, &c., &c.
Market prices; Dividends upon outlay, and when payable; Reports, &c., &c.	

SPECIAL BUSINESS as a BUYER in the FOLLOWING MINES:—

5 Carn Brea.	10 South Crofty.	300 West Chiverton.
10 Dolcoath.	20 South Frances.	50 West Peavor.
50 Herodsfoot.	50 Tankerville.	50 Wheal Jane.
50 Roman Gravels.	50 Van.	50 Wheal Peavor.

N.B.—Sellers must state number and lowest price for cash.

SHARES FOR SALE in the following MINES:—

10 Minera.	100 Leadhills.	100 Wheal Crebor.
100 West Pateley Bridge.	50 Llanrwst.	19 West Craven Moor.
30 East Craven Moor.	100 East Van.	95 Pandors.

**HENRY GOULD SHARP, STOCK AND SHARE BROKER,
42, POULTRY, LONDON, E.C.—ESTABLISHED 1852.**

Bankers: London and Westminster, Lothbury, London, E.C.

**MR. THOMAS THOMAS,
MINERAL AGENT AND ASSAYER,
COPPER ORE YARD, STRAND, SWANSEA.**

Sales and Purchase of Minerals and Metals arranged. Assays and Analyses carefully conducted. References given.

**MESSRS. D. C. DAVIES, F.G.S. AND SON, MINING
GEOLOGISTS, ENGINEERS, AND SURVEYORS, O-WESTRY, IN-**
timate that they UNDERTAKE THE FOLLOWING DUTIES in connection with Metalliferous Mines, Collieries, Slate and other Quarries, Mining Plant and Mineral Properties generally, at home and abroad.
Preliminary examinations and Surveys.
The Preparation of Plans for Systematic Working, with Supervision where required.
Periodical Surveys and Writing up of Plans.
Valuation for Probate, Sale or Liquidation. The investigation of all matters pertaining to such Properties and Business.
The Analysis of Minerals. The highest references given.
MINE OFFICES.—GOSBOWEN, O-WESTRY.

Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES.—No. CXXIX.

BY J. CLARK JEFFERSON, A.R.S.M., W.H.S.C.,

Mining Engineer, Wakefield.

(Formerly Student at the Royal Bergakademie, Clausthal.)

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SECTION IV.

CROSS STOPING.

One of the best known examples of this method of working out coal seams is that practised at Creusot, in France. The deposit may be compared to an extremely wide lode of coal, upwards of 1½ mile in length. The width varies from 12 to 15 metres in thickness, and the deposit splits up into three smaller divisions towards the western end of the deposit, one of which sometimes attains a thickness of 10 to 15 metres. The old method of working consisted of driving of a series of levels every 5 yards in depth, the levels being 2 yards in height, parallel to the general strike of the deposit, and a second series of levels at right angles to the first. Both sets of levels were driven 2 yards high and 3 yards broad, leaving solid pillars of coal 3 yards square between them. When one stage has been worked the deposit was opened out and worked away 5 yards deeper, so that a solid pillar of coal, 3 yards thick, was left between each stage. As according to this method of working only three-fourths of the coal in each 2-yards stage was worked out, the pillars being left intact, as well as the 3 yards of thickness between each stage: only three-tenths of the coal was worked away, fully seven-tenths were left buried in the broken and crushed portions of the workings. Allowing for loss from small coal, &c., it was with difficulty only that one-fourth of the coal was got. To remedy this state of things the method of cross stoping was introduced from Hungary, and used not only for working away the coal in unbroken ground but also for getting a considerable portion of the intact pillars, 3 yards in thickness, left between the stages.

The deposit is usually opened out by the means of shafts on the hanging side of the deposit, since the strata on this side, although comparatively easy to work in, are still sufficiently strong to keep open any shaft sunk in them; whilst the strata on the lying side of the deposit are intruded into by granite rocks, in which the shafts, as well as the cross-cuts, will have to be excavated. The shafts, which are usually only 9 ft. in diameter, are connected with the coal seams by means of cross-cuts every 10 to 15 fms. below each other, the cross-cuts being continued through the coal to the lying side of the deposit; a shaft is sunk vertically in the coal from one cross-cut, at a suitable point to intersect the next cross-cut below, near to the lying wall. The shaft is bricked round to prevent the coal, &c., breaking and falling in down the shaft. The ventilating current enters from the main shaft along the lower cross-cuts, and after ventilating the workings ascends through this shaft to the cross-cut above. The deposit is opened out by a pair of levels driven right and left on both sides of the cross-cut, and close to the hanging and lying sides of the deposit. The levels vary from 6 ft. to 8 ft. in height, and from 6 ft. to 9 ft. in width, being larger according to the compactness of the strata, or they may be driven more or less in the surrounding strata; sometimes one of the levels is driven completely in the schists on the hanging side. When driven close to the sides of the deposit they follow all the sinuosities of the seam. The pair of levels are connected every 12 to 14 yards by means of cross levels driven in the deposit from the hanging to the lying wall, leaving between them pillars 10 to 12 metres in thickness. The cross levels are tightly packed to the roof immediately after they are finished. When the levels have reached the longitudinal limit, or boundary, the coal is worked out 2 metres in height, backwards towards the shaft, by driving successively other cross levels, which are likewise immediately packed. In this manner the whole extent of the deposit in the level of the cross-cut is worked out for a height of 2 metres. The second 2 metres above are opened out, either by ripping down the roof of the cross-cut and driving the levels close to the sides from this cross-cut as from the first, which is filled up with packing; or the roof of the longitudinal levels is ripped down, the levels being likewise packed tightly, the packing forming the floor of the new levels. In the latter case the ripping down of the roof of longitudinal levels follows the working away of the coal—i.e., towards the pit bottom—so that the levels for the second 2 metres in height are completed simultaneously with the working out of coal for the first 2 metres; and the working away of the second 2 metres in height can be commenced immediately on the completion of the working away of the first 2 metres in height. In this manner the working away of the seam proceeds to the level of the cross-cut next above, the coal being worked away in 2 metre stages. The shaft sunk in the coal from one cross-cut to the other is kept open when the coal is removed, the coal being brought in wheelbarrows to the mouth of the shaft and tipped into it, falling into the cross cut below, from whence it is taken in ordinary tram carves to the winding shaft. When the workings in each stage are at a considerable distance from the winding pit, the distance to which the coal has to be carried in barrows is diminished by providing other shafts through the packing to one of the cross-cuts below, which leads to the level driven outside the deposit, or one of the longitudinal levels in the first stage is kept open as a tramroad, being well timbered for the purpose. The material for packing is introduced into the mines from the surface, and consists chiefly of clayey soils and slags from the blast furnaces. These are usually introduced into the mine by means of separate shafts to the upper cross-cuts, and then transported to the working places to be packed. The material is simply thrown down the shaft.

The above description refers chiefly to the working away of the seam in an unbroken district. The working away of the "etaux" is attended with some difficulty. In consequence of the broken nature of the remaining coal it is very difficult to keep open any roads in the deposit, hence in addition to the pair of longitudinal levels driven close to the hanging and lying side of the deposit a third main level is driven in the strata on the hanging side. This main level, however, is kept rather behind than in advance of the opening out of the seam, the worthless material (obtained from the driving of this main level) being used as packing material for the first set of cross levels (12 yards by 14 yards apart) driven in the coal. The longitudinal levels close to the hanging and lying walls being the most advanced; the driving of the cross levels in the deposit to connect these follows as soon as practicable. Some distance behind these the main level is driven from the level in the hanging side, by driving short drifts into the strata, and when these have advanced far enough driving right and left from them. Still more difficult than the keeping open of the longitudinal levels in the deposit is the keeping open of the shafts or passes in the coal through which the coal is transported to the level or cross-cut below. To avoid this difficulty the main level driven in the strata on the hanging side is connected every 50 or 60 yards with the main level next above by means of a blind shaft, which latter is connected every third or fourth stage (6 by 8 yards) in height, by means of short cross drifts, with the hanging side of the deposit. The blind shafts are so arranged that the lower part of the shaft comes through the roof of the level driven close to the hanging side. In order to reach the second, third, &c., stages an inclined road is commenced at the bottom of the blind shaft, the material being transported in barrows. When the fourth or fifth stages are reached the inclined road has generally become so long that it is best to put a short vertical shaft through the remaining stages.

LONGWALL WORKING, OR SIDE STOPING.

This method of working, which we have designated as "side stoping," loses in many cases the step-like arrangement which is characteristic of stoping, and hence will be best designated by the general term "longwall working," by which it is best known

in this country, although this latter name gives no indication of its relation to the modes of working already described.

The characteristics of this mode of working are included in both of the above names—a long wall or working face, and a sideward direction of the advance of the working faces. Since in the nomenclature of the previous systems we have designated the various modes of stoping with reference to geometrical position and direction of advance of the working faces, the present method ought to be called side stoping, or when the workings lose the step-like arrangement of the faces side working. The analogy between this method (side stoping) and the first described method (overhand stoping), is so great that the former may be considered as over stoping carried on in a very slightly inclined deposit. Indeed, so great is the analogy that the longitudinal profile of the workings (overstoping) in a highly inclined lode will appear almost identical in general arrangements with the plan of the longwall workings of a coal seam, the differences resulting chiefly from the requirements of conveyance, and the direction of the working faces with regard to the cleavage of the coal. In fact, with a gradual increase in the angle of the dip of a deposit the longwall or side workings will pass insensibly into the usual overstoping; nor can any definite limit be mentioned where the workings begin to assume the characteristics of overstoping, or to lose those of longwall workings or side stoping.

In consequence of the slight inclination of the deposits which are worked by this method the distance measured in the deposit between two levels is generally greater than the same distance in the case of overstoping. In the most favourable case a longwall working consists of one long uninterrupted working face, which is worked forward simultaneously over its whole length, and is in this simplest form denominated "side working with wide face," from which the English name "longwall" or "longway working" is thus derived. The length of such a working face amounts in some cases to over 1000 yards. When the rock forming the roof or the deposit itself is weak, so that it is with difficulty a great length of working face can be kept open, it is usual to divide the longface into several shorter ones, each of these faces being as far behind the adjoining face on the one side as it is in advance of the adjoining face on the other side. The workings then assume the step-like arrangement character of stoping, and become literally a "side stoping." Although the working faces are individually short still the actual face of the coal before the miners is one long uninterrupted zigzag face, and hence the applicability of the English term "longwall," even where the step-like arrangement of the working faces is in use. To distinguish this mode of longwall from that above given, and at the same time to retain the principal characteristic (wide face) of the method in the name, we shall denominate this latter as "longwall stoping." We have thus two chief divisions in the system generally denominated "longwall," which we shall for the sake of clearness denominate—(1) Longwall working; and (2) longwall stoping.

ROYAL CORNWALL POLYTECHNIC SOCIETY.

The 47th annual Exhibition of the Royal Cornwall Polytechnic Society has been held in the Polytechnic Hall, Falmouth, during the past week, and may fairly be pronounced to have been successful. Indeed, when we take into consideration the long-continued depression of trade, and the little disposition people have had of late to embark in any new enterprises, or to push forward new inventions (which may reasonably anticipate a better reception in more active and prosperous times), the extent and character of the Exhibition was far beyond what might fairly have been expected. Cornwall too, as all our readers are aware, has had its special share in the depression. Yet this does not seem to any serious extent to have affected the position and prospects of the Society; certainly it did not operate in any notable degree in retarding the success of the Exhibition. All the departments were fairly filled. There was a good show of pictures, and we were gratified to see the amateurs in unusual strength. Photography was in many respects admirably represented. Ornamental art and naval architecture exhibited no falling off. Natural history was unusually strong, and in that department with which we are more specially concerned—mechanics—there were nearly a hundred entries, and though many of them were minor matters, there were several of considerable importance, though it singularly happened that those directly connected with mining were by comparison few.

Messrs. Hathorn and Co., of London, sent the only drill exhibited, and this no stranger to the county—the Eclipse—which has done and is doing very good work in the West, not merely in connection with mining but also in respect of the important operations now in progress at the Eddystone reef, where it has been selected to clear away the hard granite and gneissic rock for the foundations of the new lighthouse. The Eclipse as shown embodied all the latest improvements, and was tried at the docks.

Messrs. Hathorn likewise exhibited Messrs. Davis and Henwood's rubber goods and life-preserving jackets, &c., and a couple of electric lamps (Aude's) recently described in the columns of the *Mining Journal*; and that of Mr. J. E. Stokes, a new and very simple form. In this lamp the current goes through a post, to which is attached the end of a coil of platinum or iridium wire, or their metallic equivalent, the other end of the coil being attached to another post arranged to complete the circuit. The coil is a very fine wire not larger than a sewing thread, and offers sufficient resistance to the current to create an incandescent heat, which produces a brilliant light. The coil is surrounded by a single, or preferably a double, glass having a half inch space filled with alum or its equivalent to retain the heat, and thus reduce the amount of electricity consumed. By an ingenious lever arrangement a platinum or iridium wire fastened to the top of the cover, when it gets sufficiently hot, expands, forms a short circuit, and relieves the coil from getting to a melting heat. Thus Mr. Stokes claims to secure an imperishable result as to material, and an unbroken, constant, and steady light. The apparatus is barely 2 in. in size, and can be fastened to an ordinary gas burner. Unfortunately it arrived too late to be judged.

It is very satisfactory to find that year by year some further improvement is being made in connection with the important work of developing additional resources. Last year the *Mining Journal* special prize was worthily awarded to the Chudleigh Road Pottery Company for their successful utilisation of hitherto waste clays, which were too refractory to be dealt with by the appliances in ordinary use. Mr. E. Borlase, of Redruth, has for years been working at a somewhat similar problem in Cornwall. He has discovered a number of really valuable and unrecognised clays in various parts of the county, but of late has given his attention more particularly to the treatment of mine waste, which he has proved to be capable of manufacture into a good hard useful ware for general purposes, and capable, too, of many special applications. This year for the first time Mr. Borlase has been able fully to illustrate the capabilities of his discovery, and he had a stand largely and well stored with a variety of articles, for the most part of a directly useful character, but some displaying considerable artistic treatment, varying from vitrified stone ware to a fair average quality terra cotta. Nearly the whole were of mine waste, and in all other cases of the coarsest clays, and the judges awarded him the *Mining Journal* first special premium for the successful utilisation of hitherto waste products. The liberality of the Editor of the *Mining Journal* has thus had the best effect in stimulating a like discovery in both the sister counties of Devon and Cornwall.

Potteries, indeed, are yearly developing into greater importance in the district, the special adaptations of many of the clays for various important purposes enabling the companies who are working in this field to counteract the drawback to which they are exposed in the carriage of coal.

The Pennance Clay and Fire-Brick Company made a liberal display of their wares, so noted for their fire-resisting qualities, as tested in tin-smelting works, burning-houses, calcineres, gasworks, arsenic refineries, blast-furnaces, and the like.

Another capital stand was that of the St. Day Fire-Brick and China-Clay Company, who gave chief prominence to their architect-

tural and building bricks, even in quality, sound in texture, and excellent in form. This is a speciality of considerable importance, and should be capable of wide development. The excellent colour of these wares, too, is much in their favour. To this stand a first bronze medal was awarded.

As connected with another branch of local manufacture, which, though not existing yet in Cornwall, flourishes in Devon, here, perhaps, is a fitting place to mention also that to Messrs. Beer and Driffild, of Exeter, a second silver medal was given for their excellent display of stained glass in the department of ornamental art.

Capt. Maynard, of East Pool, forwarded a model of his improved calciner, respecting which he wrote—"The slowness of the process in the present mode of calcination, with the quantity of coals consumed, induced me to try some experiments to lessen the same. In the old process about 10 cwt. is admitted at a time into the oven or furnace, and the average time required to calcine it is about 24 to 30 hours, consuming 3 to 5 cwt. of coal. The process that I adopted at East Pool was the opening of an air hole to pass through the bridge of the fire place. Since then I have had a piece of angle-iron cast—one part of it to pass over the bridge, the other part fitted with air-holes to allow the heated air to pass out over the burning ores or whits. The improvement is that the oxygen from the heated air, meeting with the free sulphur, greatly assists the combustion, so much so that instead of from 24 to 30 hours, and instead of 3 to 5 cwt. of coal, it now only takes 12 hours and about 1 cwt. of fuel, thus making a great saving in time and fuel." The judges rightly considered this a very important communication, and one that demanded a closer attention than could be given at that meeting, and fuller investigation as to its practical bearings than the model could afford. The introduction of air in the manner devised by Captain Maynard is, so far as we are aware, entirely new in connection with these calciners, and though a very simple device, none the less valuable on that account. It was understood that the comparative data as to the saving in time and fuel are taken from calciners at work at East Pool, and it was felt to be highly desirable that if it were possible comparison should be carried further. Eventually, therefore, a special committee was appointed by the judges, with the view of giving the whole subject the fullest practical consideration—the only way, indeed, in which the claims of such an invention could be satisfactorily tested and met.

Mr. J. J. Tresize, late of Perranarwathal, now of Plymouth, forwarded a curiosity in what he claims to be the original model of revolving calciner, as shown by Bennett and Tresize at the Exhibition of 1851, and then medalled. The exhibitor stated that the principle had been patented without his knowledge, but that he still regarded his form as the best, because, in his view, self-discharging calciners led to loss in time and fuel by frequently letting the charge come out before it was fit for the dresser. Mr. Tresize suggested that if his calciner were generally introduced into copper and well as tin mines it would save the arsenic, and by bringing up the standard much of the freight in carriage and lead to higher prices. We are afraid, however, that the depression in our copper mining is not open to so easy a remedy, and that the more automatic calciners will still be preferred.

An exhibit of considerable value was the patent gun-metal packing, shown by Messrs. Faull and Co., of Newport, Monmouth, which is specially adapted for piston-rods and slide spindles, also composite packing for pump-rons, plungers, accumulators, and all kinds of hydraulic work, stem-glands, &c. This invention was the result of the defects of the ordinary packing as manufactured during a voyage taken by the inventor. It really consists of a segmental ring made to embrace the rod closely, and kept steam-tight in a very ingenious manner, allowing at the same time for wear, and capable of lasting for years, of which, indeed, there has been ample proof. A gun-metal valve seat is placed in the bottom of the stuffing-box in conjunction with three segments, which are then placed in the seat. One end of these segments forms a valve bent with steam-tight jiggers in the valve seating. The other end of the segments is coned at the same angle as the valve seating, and on top of this is placed a coned compression ring bored out to fit. On this again is placed one turn of fibrous packing to absorb lubrication, and to give the necessary elasticity in the case of old and fractured rods. Between each segment a space is left open to allow for wear. When the rods or spindles, &c., are of gunmetal the packing is of wood; but this, too, is very durable. The rods work up with this packing to the finest surface. There is a device to apply the packing without taking the engine apart. To this a first bronze medal was awarded.

The Kennall Vale Gunpowder Company exhibited a series of Davey and Watson's compressed cartridges. These are the ordinary black powder compressed into cylinders, each pierced with a tapering hole. By this means they are strung on the fuse to the weight required, the fuse being fixed in the lowermost cartridge by being cut slanting and doubled back. Though called cartridges the cylinders are not in cases, simply the powder compressed solid; but they are waterproofed in sulphur when desired. The strong cylinders, when lowered into the hole, have a soft wad placed over them, and the charge is then tamped in the ordinary way. The special advantages claimed for these cartridges—which are, by the way, in exact compliance with the requirements of the Explosives Act—are the greatly increased quantity of work done as compared with the same weight of the best blasting powder—less smoke on explosion, no unwholesome gases, and no waste; lastly, their great heaving power, the rock being steadily lifted, not suddenly smashed. The judges recognised the value of this principle of compression, and expressed a wish to have trials arranged for, which was done. It was suggested, too, that a special enquiry might be made into the whole matter of explosives, one of the greatest importance to mining.

Another form of compressed blasting material was shown in Tonkin's blasting pellets, made of specially prepared gunpowder ingredients, and which, though called pellets, very closely resemble the preceding. The exhibitor states their density to be about three times that of ordinary grain powder, so that what would occupy about nine cubic inches is compressed into three. Hence Mr. Tonkin claims economy in boring by the use of smaller holes. "The operation of charging is also facilitated, especially in the case of back holes. The danger arising from the shrinking of powder under the pressure of tamping, which is believed to be in some cases the cause of premature explosion, is reduced to a minimum.

Connected with blasting also were the tamping plugs shown by Mr. Pentecost, of Camborne, modified since the previous exhibition in two ways. Instead of being made universally of wood, Mr. Pentecost now proposes to make the tamping plugs for crooked holes of rough pottery, made partly of slime from the Red River. He also introduced a cone end for the purpose of acting like a wedge at the bottom of the tamping, and keeping the charge from "blowing the work." The inventor claims that by the use of these plugs there would be the double advantage of economising powder and preventing accidents; but this, of course, can only be proved on trial.

Mr. N. Sars, Falmouth, obtained a second silver medal for an excellent feed-pump arrangement applied to a Cornish engine. By this device the feed may be stopped when desired, and the friction of the pump saved. Any small defect here may be remedied moreover without stopping the engine, which works on independently so long as there is sufficient water in the boiler. A special additional advantage given by the coupling is improved thrust.

An important series of models and other exhibits were sent by the Leeds Forge Company (Limited), whose works are at Wortley, near Leeds, chiefly designed to illustrate the "Corrugated Boiler Furnace and Flue Tubes," the invention and patent of the managing director of the firm, Mr. Samuel Fox. The great advantage of these tubes is their vastly increased strength—put at five times that of the ordinary flues—which they derive from the fact of their resistance being measured by that of the material to crushing, and not simply by the resistance to distortion. Beyond this they do not strain the boiler by unequal expansion, but straighten it by acting as stays; their shape gives such superiority of heating surface as enables them to evaporate 12½ per cent. more water; they keep cleaner, are lighter, and result in direct economy in fuel. As against the thickness of plate required for plain tubes, put at 9-10ths of an

* Being Notes on a Course of Lectures on Mining, delivered by Herr Berggrath Dr. von Gneissack, Director of the Royal Bergakademie, Clausthal, The Harz, North Germany.

inch, and even $\frac{1}{2}$ in., they need not be made of more than $\frac{1}{2}$ in. At the same time they are more lasting, because they have a tendency to equalise the temperature by improving the circulation, while by obviating the strain due to expansion and contraction, which takes place in ordinary marine furnaces at the fire-bars, they are not so liable to be destroyed by pitting. Flues are notoriously such a weak part of boiler construction that any improvement in them is of considerable value. Probably there could be no better test of the value of these corrugated tubes than the extraordinary voyages made by the Union Mail Company's Cape steamer Pretoria, which is fitted with them. The model boiler shown in the Exhibition was also fitted with the patent Hepburn expansion ring for marine boilers. The judges marked their sense of the importance of this invention by awarding it the highest distinction in their power—a first silver medal.

An excellent form of cement testing machine, compact and powerful, working up to 1500 lbs., was shown by Senor Vitale Domenico di Michele, of London, and awarded a first bronze medal.

For a cleverly made and ingenious model of the Panther Lead Smelting Works, Bristol, correct in all its details, the maker, Mr. H. Penrose, had 1 $\frac{1}{2}$ for workmanship. The Panther Works are noted for their efficiency and completeness. Mr. Bower, of St. Neots, exhibited illustrations of his process for the preservation of articles of ordinary iron from rust by coating them with magnetic oxide—a device which has not only been found thoroughly efficient under two years constant exposure, but really adds to the appearance of the articles so treated, to which it gives a rich blooming look. The castings under the "Bower" process are simply placed in a chamber, and when red-hot exposed to a current of air for from six to twelve hours, after which the air is shut off, and the retort closed for two hours. This is the whole of the *modus operandi*, and thus the air which under one condition is the destroyer is here made the preserver. Professor Barth, we believe, employs superheated steam. Mr. Bower received a first bronze medal.

Messrs. Hopewell and Co., of Topsham, exhibited in model and full size their patent improved reversible wrought-iron or steel fire and bearing bars, which have been used at various places in the county, including the man-engine boiler at Dolcoath and Delabole, and are largely employed in manufactories in the West of England and elsewhere. The bars are of wrought-iron, made single, each dropping into its place independent, the distance being preserved by studs. From their small width as compared with ordinary bars, there are nearly double the number of them in a furnace. This distributes and improves the air space, giving a better draught, and thus prevents the bars from burning or the clinkers adhering to them. Moreover, no ashes or cinders can pass through unless thoroughly burnt, and under $\frac{1}{2}$ in. in size, so that furnaces so fitted are peculiarly adapted for burning small coal. Any kind of fuel, however, can be used, and entirely consumed. From the form and material these bars are less than half the usual weight, and being parallel they are reversible, and can be used both sides, thus being equivalent to two sets. Moreover, even without this they are stated to last longer. Any bent bar can be taken out, straightened, and replaced while the furnace is at work, without loss of time. They are made with air spaces varying from $\frac{1}{2}$ in. to $\frac{3}{4}$ or $\frac{1}{2}$ in., and are equally adapted for large or small boilers. The judges recognised the value of the introduction of narrow bars and closer air spaces, and considered these bars of considerable advantage over the old form of cast-iron bars. They pointed out, however, that there were some narrow cast-iron bars already in use, and so far as Cornish mine boilers were concerned, where slow combustion is required, doubted the profitable application of the principle.

The Atlas wastewater indicator (R. H. Hughes's patent) is a very simple and efficient arrangement for the indication and prevention of waste from tanks, cisterns, and other water receptacles. It consists simply of a spindle, with vanes or buckets—a little water-wheel—enclosed in a case, on the outside of which is fixed an alarm bell on the end of the spindle, and with the bell on the strikers, the whole being made of incorrodible materials. This is attached to the overflow or waste-pipe, and actuated by the effluent stream. It will be seen that this little piece of mechanism is capable of very wide use and application. A second bronze medal was awarded.

Messrs. Follows and Bate, Manchester, have considerably improved their archimedian ventilators, which are now agate, centred in such a way that friction is reduced to a minimum, and durability and safety immensely increased. All risk of fire from the oil cup fastenings giving way is avoided. The principle of the archimedian is too well known to need explanation. The form for power can be made of wide utility in connection with workshops and the like, as well as under mere domestic conditions. The improvement was commended.

Mr. H. Fajia, of Westminster, sent his improved indicator and counter, which indicates the number of revolutions or other intermittent motions of the machinery to which it is attached per minute, by the simple inspection of a dial and pointer. The construction and working are purely mechanical, and it operates equally well in any position. Mr. Fajia also sent his patent "perfect" mixture, to produce with ease and certainty the perfect admixture of dry powders. These machines are so simple that they may be entirely taken to pieces, cleaned, and refitted by an unskilled workman. The indicator was recommended for trial.

Mr. Paul Pfeleiderer, of London, exhibited in connection with his improved Universal Patent Kneading and Mixing Machine his patent device for transmitting and reversing motion. As well as it can be explained without the aid of diagrams, we may say that this consists of two loose pulleys, with an open and a cross strap, combined with friction or other clutches, moved into or out of gear with either pulley as required, and so fixing it on the shaft or releasing it. These clutches consist of projections, one on each side of a disc, so secured on the shaft between the pulleys as to be capable of sliding to and fro. By this sliding movement of the disc these projections or clutches can be made to enter into and embrace corresponding parts in either pulleys as required. The disc is moved on the shaft as required by a tapped hand wheel. To this ingenious invention a first bronze medal was given.

Messrs. Vosper, of Portsmouth, sent one of their exceedingly compact four-cylinder engines, which are admirably adapted to various purposes in which considerable power and rapid operation is required in a small space, and, therefore, specially suited for launches, winch engines, and the like. The engine was tried at the Falmouth Docks. This make of engine is almost noiseless in working, though capable of running at a speed of 800 revolutions per minute. The cylinders are in pairs, each pair set at an angle on the opposite sides of the shaft. As there is no dead centre they will start anywhere. The steam can be cut off at any part of the stroke, and for boats and cranes they are fitted with very simple reversing gear. Where no reverse action is required a fly-wheel is introduced. The judges considered it very simple and compact, but needing some re-arrangement of details.

Mr. W. Sisson exhibited a diagram of an improved thrust bearing, specially adapted for vessels propelled by a screw and not fitted with a shaft funnel, such as yachts and tug-boats. In these cases the thrust bearing ought to be readily accessible, and under eye in the engine-room. If, however, a corrugated thrust bearing of the ordinary form were used a larger engine-room would be required, while of the aft bearing in the bed-plate were made corrugated to serve as a thrust bearing it was very liable to heat. Another plan frequently adopted by good makers for small engines is to make two solid collars on the crank shaft, allowing them to work against flanges on the aft bearing brasses in the bed-plate. Here, however, there is no adjustment for wear, and this adjustment Mr. Sisson obtains by a loose collar, and a nut to set up, both collar and nut of course being made in halves. The halves of the collar are fastened by screws, and those of the nuts dovetailed. The screw in the shaft is large in diameter than the plain part, so that the halves of the nut can be slid together and then screwed on.

Mr. Sisson also had a model of a steam-hammer and of a portable drilling machine for drilling at any angle, and a very handy and compact blowpipe case.

Mr. W. Brenton, of Polbathick, sent samples of his improved sash fasteners and bolts, to which a medal was awarded at the Royal Agricultural Show at Kilburn, and which now received a

first bronze medal. Sash fasteners and bolts are alike the simplest and most efficient forms yet introduced—the sash fastener fastening the window and drawing the sashes together by a simple turn of the handle. In one form of bolt, specially adapted to railway trucks, &c., by the use of a bevel, opening and shutting is effected by simply throwing the handle up or down.

Messrs. Clarke, Stanfield, and Co., of London, sent a set of their lithographs of rack inventions, which are of such high value. Mr. J. T. Letcher, of Redruth, was highly commended for a funnel, which by a double casing discharges the air carried down by the fluid poured over so quickly, and keeps up a steady flow. To the chromograph, the simplest form of copying printing apparatus, a second bronze medal was given. The like award was made to an archimedian drill on the bow and string principle, by G. Rutter, of Devonport. A sieve roller, invented by Mr. Leonard Rogers, of St. Agnes, was recommended for trial. Wheeler and Wilson's sewing machines and the Little Rapid Knitter were highly commended. The Patent Automatic Check Till and the new "Empire" cloth (Messrs. Avery, London) were commended. Among the other exhibits were Williams's safety and self-sustaining block, much improved, and thoroughly efficient; and a model furnace door by Mr. T. Warsop, Nottingham, to save fuel and prevent smoke.

A first silver medal has been awarded to a very ingenious invention by Mr. H. S. Mackenzie, of Falmouth, and Mr. James Vivian, of Meylor, exhibited two years since as the dual engine, and the adjudication on which was then adjourned by the judges for trials, which have now most successfully been carried out. The invention consists of a looped cross-head and dual bifurcated cross-head for obtaining concentric rotary motion uniform or otherwise where an inner (male) and outer (female) shaft are used, from one initial rectilinear motion without belt, cog, or friction gear. The drag-block in this invention instead of actuating a crank-pin at the extremity of the shaft may be thrown round it at any convenient or desired point, thus allowing of double or dual concentric rotary motion either in the same direction or reverse, being secured from the single initial rectilinear. The exact *modus operandi* cannot be explained without diagrams. Though most of the experiments made in the past seven years have been in connection with marine propulsion, when the advantage of speed and a perfectly straight course from the employment of right and left handed propellers rotating in opposite directions are so decided, it may be put to many other uses, such as pumping (two diverse screws lifting water, or even mud and gravel where no ordinary valves could be used), for laying wire or cord uniformly over telegraph cables, grinding and crushing mills, dispensing with all cumbrous cog-wheel gearing. No difficulty exists as to high speeds, for actual trial shows that the higher the speed the engine is run at the more noiseless and steady is its operation.

Mr. RICHARD TAYLOR, F.G.S., is the President of the society, of which he was also the first secretary, and much interest had been felt in the address which he was to deliver at the opening. Unfortunately, however, Mr. Taylor was taken ill a few days previously, and did not recover sufficiently to be able to attend on Tuesday, although at the home of his son, Mr. G. Taylor, at Devoran. In Mr. Taylor's unavoidable absence Canon Rogers kindly undertook to deliver the opening address.

Canon ROGERS, in the course of his remarks, said there were two great objects which this and kindred societies had in view as centres of progress and civilisation. One was to encourage and bring before the world pioneers of science—for there must be pioneers of science—and the other was the diffusion of the valuable effects of their discoveries. Although that was their chief object, they must not forget—and he expected that strangers would forgive them if they were conceited enough to remember—that they had had heroes even in Cornwall, such as Trevithick in engineering, Opie in art, and Davy in science; and why should they not hope that, under the fostering influence of such an exhibition as they saw before them, there were others who would rise from the present generation to take their place and emulate them in their good deeds? The rev. gentleman then reviewed in detail the various exhibits, commencing with the mechanics. He particularly referred to the specimens of pottery made from mine waste and Cornish clays which were exhibited in this section, and he thought it was a great pity that Cornwall did not manage to start a manufactory on a larger scale for the promotion of this industry. They wanted some fresh opening for their working population, and he thought it would be a very desirable thing that a company should be formed to carry on the manufacture. In the section of statistics, essays, and scientific papers he was sorry there were not many exhibits, and he pointed out the great desirability of gathering together information on scientific subjects, to which he hoped greater attention would be given. In his concluding remarks Canon Rogers said he took it to be a happy omen that the scientific world and the religious world were beginning to look each other in the face with a little more kindly feeling. It seemed to him that in the past they had been on two sides of a glass diaphragm, which had had an irregular surface, and that their views of each other had, consequently, been distorted. Now they might hope that not only had that irregular surface glass been replaced by a sheet of good plate glass, through which they might see each other plainly, but that they would have a porous diaphragm, with full dialysis, looking into one another, as it were, and trying to know one another better. There was no longer a hard line of demarcation separating them, but they were beginning to understand and appreciate each other. He was sure the religious world gained much from the scientific world, and he hoped the scientific world would gain something from the higher and still purer joys from above.

A hearty vote of thanks to the rev. gentleman was carried on the motion of Sir JOHN ST. AUBYN, M.P., and Mr. JONATHAN RASLEIGH.

During the exhibition addresses were delivered by Mr. R. N. Worth, F.G.S., on some of the leading exhibits, and by Mr. W. Brooks on new processes of photography, experimentally illustrated.

THE MINERS' ASSOCIATION.

The annual meeting of the Miners' Association of Cornwall and Devon was held on Wednesday at the Polytechnic. In the absence of the President (Mr. R. Taylor, F.G.S.) Sir JOHN ST. AUBYN, M.P., took the chair.

The report of the Council dealt with several matters of peculiar interest, among them referring to the successful effort made in the *fete* at Tehidy, and continued by a bazaar for the disposal of the unsold articles at Falmouth, to relieve the Association from the serious pressure of the heavy incubus of debt which has been hanging over it so long, gathering greater weight with time. Now it was hoped they would have a new lease of life with a balance in hand. Special mention was made of the liberality of Mr. Basset and the aid given by the Polytechnic Society. During the year Mr. Gripe, local secretary, St. Agnes, had died. The Council congratulated the Association on the increased number of students, and on the fact that the Miners' Association medal had again been won by three of the students—H. Eddy, W. A. Humphrey, and F. Johnson. During the year the example of the Editor of the *Mining Journal* in giving prizes had been followed by the editors of other newspapers. The Council recommended that 20 $\frac{1}{2}$ be given to Mr. J. H. Collins as some recognition of his valuable services in past years, and 10 $\frac{1}{2}$ to Mr. Kitto for his labours in connection with the bazaar.

The Lecturer, Mr. B. KITTO, F.G.S., reported as follows:—The Lecturer has again the pleasure of reporting a considerable increase in the number attending the classes in connection with the Association; and the past year has been, on the whole, a very successful one. From the customary list of successful students, it will be seen that the number of those who passed the examination of the South Kensington Science and Art Department is greater than in any previous year—304 against 245 in the year preceding. The new arrangements for the district classes inaugurated last year met with general approval among the teachers, and the result of the last May examinations shows that the earnestness and energy which they have always manifested in the work of the Association has in no way abated. The subjects lectured on and studied in the classes have taken a wider range than usual, but they have all a bearing on mining operations. Several of the students have distinguished themselves in the late examinations. Attention may be drawn to the large number of first class advanced stage obtained by H. F. Collins, of Truro class, and Frank Johnson, of Redruth class. The students of Pendenze class, Benjamin Augwin and W. B. White, have gained the blue month's scholarships, South Kensington. The laboratory at Camborne has been well appreciated, a considerable number of young men having availed themselves of its advantages during the year, and in addition to chemical analysis a good many have worked there at assaying the commoner metallic minerals. The examination held by the Society of Arts on Blowpipe Analysis was more numerously attended, and the successful candidates more numerous than in former years. The first prize for manipulation with the blowpipe was awarded to W. H. James, Redruth class. It is gratifying to find some of the pupils of our classes continuing to take good positions after leaving us. It will be remembered that our former district teacher at Bayle, Mr. W. Lago, was appointed head master of the Brighton Science Schools. He has since received a grant from the funds of the Chemical Society to enable him to carry out experiments on the investigation of sea water. Mr. J. J. Berlinger, who gained one of the six Royal Exhibitions, has continued his studies with success at the South Kensington schools, as proved by the fact that at his recent examination he stood at the head of the list in Mineralogy,

and was also placed first in Inorganic Chemistry. Cornelius Berlinger has also taken a good position.

It is the custom of the Society for the report of the council to be read by the secretary, but on this occasion it was read by Sir John St. Aubyn, in consequence of the secretary having been personally referred to Mr. Collins and Mr. Kitto. The adoption of the report was moved by Mr. HUBBARD, who congratulated the Society on the work done and the improved position of the Society. He believed the system of training now in force was the best way of training their young men up to be practical men in the future. Canon ROGERS seconded the motion, congratulating the Association and the county on the work done. It was a remarkable fact that they had such a large number of passes, and of those of such high quality—50 A 1 and 42 A 2, besides honours. He was glad to see mathematics creeping into the list. It might seem of little practical importance, but was an excellent foundation, and gave exactness and accuracy to the mind.

HEAVES OR FAULTS.

A very suggestive and thoughtful paper, leading up to important practical conclusions, had been contributed by Mr. Alfred T. Davies to the Polytechnic Society, and there awarded a first bronze medal. As dealing with some of the more urgent questions of practical mining it also came before the Miners' Association. Mr. DAVIES, in opening, remarked that a miner, though talking fluently of "right-hand and left-hand heaves," "upheaves and overthrows," "more lode and less lode heaves," "the master lode," and using a variety of other expressions, as a rule had no idea of a general principle by which, no matter in what district he might find himself, he might know where the lode when heaved was to be found. The miner had seen or heard of such a position, or one very similar, and his experience very often enabled him to judge right, but then, on the other hand, very often he was wrong. Lodes were not contemporaneous, but had been formed at different periods. A fracture in the rock occurred, a shift of ground took place, and a fissure remained of varying width. In course of time the fracture became filled with mineral matter, a lode was formed, and the whole became one rock. After a time a second fracture occurred, intersecting the plane of that first formed. Again there was a shift of ground, and the first lode was faulted or heaved. And so the process was repeated, until at the present day we see a highly complex series of veins and accompanying dislocations, all the effect, so far as could be judged, of one and the same cause, and differing from each other only in order of precedence and character of contents. Mr. Davies quoted Pryce and Carnes upon the age of the various lodes, and then the views of Mr. J. H. Collins, F.G.S., which differ slightly only from those of the latter.

Mr. Collins ranks them thus:—1. Oldest tin lodes, caunters (Polgorth, traversing elvan).—2. Older tin lodes, mostly east and west, chiefly north underlie (St. Agnes, St. Just).—3. Newer tin lodes, mostly east and west, chiefly south underlie (St. Agnes, St. Just).—4. Older east and west copper lodes, great majority, many tin in depth.—5. Older caunter copper lodes.—6. Cross courses.—7 and 8. Newer east and west caunter copper lodes.—9. Cross flookans.—10. Slides east and west, but probably of several ages.—11. Alluvial faults. It was important that these epochs should be identified. Expectations of ore at the junction of two veins were not always realised, for example—if the first-formed vein had been filled with its present mineral contents previous to the formation of the vein which intersected it, it was evident that its riches could in no way be enhanced by such intersection. Should, however, a tin-bearing vein of the second or third epoch of Mr. Collins intersect one of the first epoch, they might with good reason expect to find a bunch of ore. Riches discovered at an intersection might be attributed to—1. Conditions similar to the above.—2. The bringing to the same horizontal plane (i.e., to the same level) different parts of the lode, this being equivalent to proving the lode at two levels.—3. Accidental coincidence. Lodes, too, were said to be impoverished by a fault, of being lost rich and found poor. The severed rich part had been removed by the fault, and the miner expected to find it at the same level when he again discovered the lode. This was but the converse of number 11. Mr. Davies then went on to deal with the mineral phenomena of the St. Agnes district, which the paper chiefly dealt with. Different rules were in use by which the continuation of the lode beyond the fault might be found, but they were all open to the serious objection of leading occasionally to expensive errors. To avoid this Mr. Davies drew attention to the fact that the fault or heave of a vein by one intersecting it was produced by the descent, or sliding down, of the hanging wall of the intersecting vein, such descent being the effect of gravitation. This was beyond theory, but was a fact proved by many on observation, and one which fully accounted for the varied phenomena observed, both in connection with metalliferous as well as coal mining, and one of which all mining men should be cognisant. The various rules in use were—

Rule I.—"Consider the hanging wall of the fault to have descended relatively to the footwall, then calculate the direction of the heave which must have been produced by such descent." This had been followed by a few individuals for many years. In this experience it had never been known to fail. Exceptions were, it is true, known to exist, but the percentage was very small, and this was by far the best by which heaved lodes could be found.

Rule II.—"A bed or vein being put up against a fault the continuation will be found on the side of the obtuse angle." Canon considered this rule of primary importance, but while it was applicable in the majority of cases in bed mining, it had very numerous exceptions when applied to metalliferous veins. As it was generally advantageous to recover lodes in the same horizontal plane as the vein in which they were lost at the same level, the rule of the right hand heave was that which had been usually followed in the case of faults by cross-courses.

Rule III.—"When a lode is heaved by a cross-course the continuation will be found on the right hand side." This rule was not so much heard of as formerly, and was not to be depended upon. Mr. W. J. Henwood's tables on this point showed that the rule of the obtuse angle was far preferable to the use of the right hand heave, but for the St. Agnes district this deduction was open to the objection that the majority of the tin lodes underlying north, and the cross courses east, the heave would be to the right hand. Mr. W. W. Smythe gave the following rule, which Mr. Collins stated was still more universally true.

Rule IV.—"When the lode is not by a cross-course erect a perpendicular; on whichever side of the line of intersection this perpendicular lies on that side search for the lode."

Rule V.—"Gossans throw the lode up north." The rule in the St. Agnes district was accurate when applied to the heave of the north underlying tin lode, by the south underlying gossans, but not always so when applied to the gossans heaves. Mr. Davies used the term gossans as employed at St. Agnes, where the so-called gossans are equivalent to the east and west copper lodes of other districts, but rarely contain copper, generally underlying south, but occasionally north. The intersections to which these rules applied Mr. Davies divided into two groups—1. Intersections in underlie or depth.—2. Intersections in course or strike. In the first group they had three classes—*a*, by veins heaving in an opposite direction; *b*, by veins having a similar but less underlie; *c*, by veins having a similar but greater underlie. In the second group they had two classes—*a*, by cross courses at, or nearly at, right angles; *b*, by caunters at acute angles. These Mr. Davies explained by elaborate figures and models. In conclusion, Mr. Davies said no one should trust entirely to any rule for the recovery of a heaved lode, as in many, indeed in nearly all, cases these heaves were accompanied by local dislocations sufficient to make the recovery certain, but frequently overlooked. These were stated as follows:—1. At the time of the fracture and formation of the fault the rocks were most probably not in the hard and rigid state they now are; the sliding of the hanging wall not only produced the smooth and striated slickenside of the walls, but bent the strata on either side, including the vein within. The rock, in fact, yielded to the pressure in the direction of the sliding, and we consequently find the heaved vein when nearing the fault inclines towards the heave.—2. Again, when approaching a fault, minor struts, shoots, or branches of the fault are sometimes met with; these leave in the same direction as the main fault, but to the extent of from the motion of an inch to several inches, when the lode is said to jump towards the heave.—3. The lodes being frequently more porous than the including country they are consequently the channels of circulating water, and there is always a tendency to continue the circulation between the separated parts of the vein. The water in passing through the fault leaves a stain in the direction of the heave called the "lode" or "lead" of the lode. Flukany faults prevent this.—4. The fault includes within its walls fragments of the country and lode heaved. These are called the serrat or scratch of the lode, and are found in the fault in the direction of the heave.

In reply to Sir JOHN ST. AUBYN, Mr. COLLINS, who read the paper, said that he believed if the directions of the papers were followed the lode would be found in 99 cases out of 100.—Capt. A. JAMES questioned the correctness of the conclusion that all heaves by cross-courses were vertical. In the case of Bawden's cross-course one lode was shifted right, another left, and a perpendicular lode had not shifted at all. This then was vertical. Baldwin's lode a little further off shifted all lodes 8 to 10 fms. right. This must then have been a horizontal shift. In West Damsel, in granite, a cross-course shifted every lode independently of angle or underlie 13 feet to right hand. He hoped the paper would be published.—Mr. COLLINS hoped Capt. James would put his facts upon paper. The Association would be glad to receive them.

COMPRESSED BLASTING-POWDER.

Mr. WILKINSON, on behalf of the Kennall Vale Gunpowder Company, and at the request of several gentlemen interested in mining, explained the character of the compressed gunpowder cartridges exhibited in the Polytechnic Hall, and referred to in our notice of the exhibition. They were much stronger than ordinary powder, and adopted for use in stopes and back holes. They were about twice the strength of ordinary powder.—Mr. COLLINS thought there was an objection in the fact that they would not fit the hole as accurately as a loose explosive.—Mr. WILKINSON said that objection had been raised, but not found of consequence. They were used in Dolcoath, Carn Brea, Tincroft, East Pool, where the consumption was increasing.—Capt. ROGERS asked if there was any mode of testing the rapidity of the explosion and the explosive power of the compressed powder, comparatively.

Mr. WILKINSON was not aware there was any machinery for this purpose. He presumed much would depend in use upon the nature of the ground.—Capt. KICH asked if the compressed powder would do better duty than loose. He was told that if loose powder was put into a fowling piece and the shot rammed hard and the powder left loose, the gun would burst. Now what they wanted to do was to burst the gun. If this was so, compressed powder would be no advantage. Mr. HUBBARD said that with nitroglycerine the rapidity of combustion was 17 miles a second, of gunpowder about a quarter. This matter had been brought before the judges at the Polytechnic, and by them practically referred to this Association, as they did not know what to do with it. He thought the Polytechnic would do well to appoint a committee to try experiments on the real force and relative power of these explosives. In all large ordnance the grains were now put in loosely, so that Capt. Kich's observation badly applied.

Canon ROGERS stated that in these cases the grains were all of a regular size, and duly proportioned to the air.—Mr. WILKINSON said pebble powder was now an irregular cube of about $\frac{1}{16}$ in.—Dr. HUBBARD thought the question proposed by Mr. Hubbard had been settled by the Government experiments by Capt. No. 1. Nitro-glycerine was 13 times the force of gunpowder, and the new nitro-glycerine was 10 times that strength.—Capt. KICH said that in using every case at Tincroft, and Carn Brea, the results of the compressed powder were satisfactory. They were about one-third stronger than ordinary gunpowder. As to Capt. Kich's remarks, they had found tamping the gunpowder useful. He did not believe these cartridges were so dangerous as ordinary powder. Loose powder was treated carelessly, and not properly settled.

He believed most of the explosions were caused by the compression of the air in the hole. There was no difficulty in making the cartridges fit, as they would crumble a little, but practically they fitted. If dynamite was the same cost as powder, powder would have no chance, but there were cases where powder was not economical.

Mr. F. W. MICHELL quite endorsed Mr. Husband's proposal for the appointment of a committee to enquire into the power and safety of explosives. Mr. F. MICHELL could not understand how there could be two opinions as to the advantage of compressing powder. In hard ground he used to put in powder, and tamp it with an iron bar and a 14-lb. sledge.

Capt. RICH had rammed powder in too, but he thought it was a mercy he was after it. It lists were made by the Government Company would give them every facility. They tested the different explosives by seeing how far they would enlarge holes in metal. Capt. TRAVIS remarked that in all holes charged with dynamite the oil would float on the water sometimes.

Capt. RICH rejoined that the oil would sink. Mr. KITTO remarked that the relative power of explosives had been settled by the Government enquiries. Could Mr. Wilkinson show any experiments with the compressed as against grain powder? Mr. WILKINSON would gladly do this at the town quarry. Mr. W. M. GRYLLS suggested that the Association, with the Polytechnic, might offer a premium for an essay on the subject. The relative powers of explosives had been settled; what they wanted to know was which was best adapted for mining purposes. Mr. J. H. B. ATKINSON entirely concurred in the views of Mr. GRYLLS and Mr. Husband that they should investigate how the explosive power of various substances could be made best available to the conditions of Cornish mining. Mr. HUSBAND and Mr. GRYLLS then moved that the committee of the Association should be asked to confer with the committee of the Polytechnic Society with a view to appointing a committee of enquiry to investigate the question as raised. This was adopted unanimously, and the meeting then adjourned.

Meetings of Public Companies.

MINING ASSOCIATION.

A general meeting of shareholders was held at the office, Austin-friars, on Tuesday. Mr. J. W. WILLIAMSON in the chair. The reports and accounts having been presented, some discussion ensued as to the advisability of taking a further interest in the English-Australian Company. The position and prospects of that company, and the special inducements for further subscription having been explained, it was ultimately decided unanimously that a call of 1s. per share should be made, and that the number of shares to be taken should be left to the decision of the board. The report and accounts were passed. Mr. Daukes, the retiring director, and Messrs. Brandt, Stansfield, and Company, the auditors, were re-elected, and the proceedings terminated with the customary compliment to the Chairman.

TANKERVILLE MINING COMPANY.

The annual ordinary general meeting of shareholders was held at the offices of the company, Austin-friars, on Tuesday, Mr. PETER WATSON in the chair.

The LONDON MANAGER AND SECRETARY read the notice convening the meeting. The accounts were taken as read.

Mr. EDRIDGE said he believed a resolution was passed at the last meeting that the directors' report should be sent out before the meeting, but this had not been done.

Mr. MURCHISON said no resolution to that effect had been passed.

The CHAIRMAN added that he took the responsibility of keeping back the reports of the directors and of Capt. Waters, as important negotiations, which had since been completed, were then pending. (Hear, hear.) Everything had been done with a view to the welfare and prosperity of the company. (Hear, hear.)

The LONDON MANAGER then read the reports of the directors and resident manager.

The directors' report expressed regret that the continued depression in the price of lead had prevented them showing a better state of accounts. They had very expenses of 100% per month, but the fall in lead made a difference of 21. 14s. 6d. per ton, or nearly 3000%. The loss after abatement in royalty was 938. 7s. Considering the adverse circumstances, the directors feel some satisfaction that the results are not more unfavourable, seeing that a vigorous development in sinking and driving has been carried on at a great expense, not only in labour and working the machinery, but in providing the necessary pitwork, timber, &c., out of revenue, while additions have also been made to the plant. The tribute system has been extended during the past twelve months, and has worked well. Earl Tankerville has been given up about 23d. for royalty payable to him up to Lady-day last, and from that date reduced the royalty to be paid to him from 14. per ton (as provided by the lease) to 1.30th on the sales of ore for three years. These timely concessions on behalf of Lord Tankerville make a difference to the company up to the date of 720%. The only condition required by Lord Tankerville is that this company should extend its operations to the workings of the Goodish Tuesday and Pump Sump lodes, and operations have already been commenced there. The directors have reduced their remuneration from 5000. to 3000. per annum, and express their belief that, with the prospect of early increased returns, and better prices for the produce, satisfactory dividends will be resumed at no distant date.

Captain Arthur Waters' furnishes a very voluminous report upon the various points of operation. He remarked that for some time past the mine had been under a cloud, the monthly returns being limited to quantities, and sold at prices inadequate to meet expenses. He thinks, however, that they are now moving away gradually, but surely, from that state of things, and shall shortly see the mine increasing its output, and lead ore selling at remunerative prices to the shareholders. They have at work 16 pits, by 35 men, at tributes varying from 10. to 50. 10s. per ton of dressed ore, the total yield of the same being valued at 84. tons per month. Since the commencement of the company the work done, shaft sunk, winzes sunk, levels driven, and ground stoped, has been 4868. 5 fms.; and the total returns have been 13,450 tons 12 cwt., realising 180,824. 19s., showing as the yield of ore for the whole mine, including shafts, cross-cuts, and other dead ground, an average of 2 1/2 tons per fathom. There are 164 persons employed underground.

The CHAIRMAN said: Gentlemen, in rising to propose the reception of the accounts and the directors' report, and last, but not least, the most important document called the annual report of our manager—

Capt. Arthur Waters—who I am sure you will all be pleased to see looking so remarkably well, for I must call to mind the fact that if the captain or manager of a mine is looking well we always say the mine must be looking well, and it is an acknowledged fact that that is the case. I think you will gather from the reports that there is still some hope for the future. We always live in hope. We have lived in hope for the last twelve months that we should see a little sun, and I am happy to see that the sun is now beginning to shine upon us—thank God for it. Now, I want to call your attention to the resolution passed on July 19, 1879, which stated "that in future the annual general meetings be held alternately on the mine and in London." There was a good deal of discussion as to the number of the attendance at either place, and some said that double or three times as many shareholders would be present at the meetings here as would attend at the mine. Since that resolution was passed we have had one meeting at the mine, and I think there are either 23 or 24 shareholders present now, which shows that the policy of that resolution was at all events a very good one, and that it has met with the approval of all the shareholders. (Hear, hear.) It is perfectly correct that the shareholders in London should have the opportunity of attending the meetings, and that those shareholders residing in Shropshire in Wolverhampton, or in Birmingham should have the opportunity of attending meetings and visiting the mine once a year. Now, gentlemen, you have heard these reports read, and they are really so very full that they leave me very little to say on the present occasion, but if you will bear with me to-day a little I will go into the facts to show that those to whom you have entrusted the management of your property have done their duty to the best of their ability, during a period of the most unheard-of depression that ever existed in this country. First of all, we had an expenditure in the previous year—1877-8—of 13,666. 1s., and this year one of 11,755. The receipts on the other hand were 13,113. In the former year, as against 10,544. in this year. The average price of our ores in 1877-8 was 12s. 9s. 6d. per ton, and this year it has only been 10s. 15s. 3d., or, in other words, 21. 14s. 6d. per ton less, and this upon a sale of 108 tons represents a loss of exactly 2943. In comparison with what you would have had if the price of lead had kept up, moreover, you would have had more tribute pits set if the prices had kept up, more stopes would have been worked, you would have had more ore, and at least 30000. to your credit, instead of a debit balance against us of some 10000. at the present time. That is a very serious matter, and one which the directors have had to cope with in the management, and in order to meet the times we have had to put our shoulders to the wheel in every possible way to surmount these great difficulties. Notwithstanding this it has been currently reported, I have heard, on many occasions that Tankerville was going into liquidation. It has continually been so stated to the secretary and to our directors both in London and Wolverhampton.

A SHAREHOLDER: One of the directors almost stated it himself.

The CHAIRMAN: Did he? I should like to hear his name. (Hear, hear, and "Name.") I will solemnly state I never did.

Others of the directors also said they made no such statement.

A SHAREHOLDER: I think the statement should be withdrawn unless it can be verified. (Hear, hear.)

The CHAIRMAN: We have done everything we possibly could. We have extended the tribute system, as you will have seen from the report, and it will be further increased, for I feel satisfied that from great lodes in Tankerville and from the upper levels we shall have an increase in our returns. I do not often notice anonymous letters, gentlemen, but my attention has been called to a document in the Mining Journal of last week, the initials of which are not, I believe, those of any one of our list of shareholders, which goes on to state that the directors had not kept faith with regard to their remuneration. We have kept faith, and we have shown it in the report. Our reduction took place at the end of the current quarter after the meeting at which it was conceded that the remuneration should be knocked down from 5000. to 3000.; but if you had instead of reducing the remuneration, given them 5000. or 10000. they could not have worked harder nor have done their duty more manfully for the company. However, there it is, and I hope the time is not far distant when, having something in your pockets, you will give us our proper fees again. (Hear, hear.) You will see that we have made a loss of 12000. in the year, but that is not altogether in the development. We have had to buy pitwork and timber for the new shaft, and we have vigorously developed as if we were going to get 17. per ton as we used, and

as I hope we shall again. We have pushed on the operations as vigorously as possible. We have also, in addition to the timber and pitwork, laid out something at intervals on extra dressing floors, and all this has been paid before calling in the loss at 12000. Now, gentlemen, I will go on from this—I do not think there is any necessity to touch on the report for the time being—to a very important matter which has taken place at last, and in which negotiations have been pending since 1877. I do not want to take too much credit to myself for having worked with determination and energy to bring the matter before his lordship, the Earl Tankerville, with regard to the great question that is now brought to bear on this country—the competition of foreign nations. Mining is now a very different matter to what it was many years ago. Lead is being raised in various parts of the world, which was not the case some years ago when these royalties were fixed, and therefore it is the duty of the landowners and landlords of development of underground, as well as at surface in agricultural lands, to look the matter fully in the face, and to give that assistance which has always, to my knowledge and experience in Cornwall, been a great incentive and support to mining generally. I can speak with respect to Dolcoath, Carn Brea, and Tincroft, where great liberality has always been shown, and they are three of the best mines at the present day, but except for the liberality of the lords of these mines, to my certain knowledge they would have shut up, and all the district would have been idle, for the water percolates from one mine to another, and it would have been impossible to have resuscitated them. So it would be with Tankerville, as I have pointed out, and the water got in, and it would be difficult to get it out again, and the district would be greatly injured. I pointed out these matters and the depression of trade, and continually brought them before Mr. How, who at last passed me the compliment to say (he is a solicitor)—"You ought not to be connected with mining, you ought to be a lawyer." (Laughter.) I must say for Mr. How that he was most polite, and he has received me on all occasions—in particular with reference to this mine—with a great deal of cordiality and argument why his lordship should not do what I asked. He has listened to me from time to time, and his lordship has at last, with a great deal of liberality, consented to a reduction of the dues to 1.30th for three years, in the hope that by that time the mine will not only be considerably improved, but that we shall have received profits in the shape of dividends, and that the mine will be opened out, and that things will be a great deal better. If things are not better by that time we must only hope for a further reduction. In addition to this his lordship has most liberally foregone royalty amounting at the present time to 7000.—the exact figures are in the report. All these landed interests feel the effects of these depressed times, as well as the proprietors of mines and landowners, and, therefore, under all the circumstances, I think you will say that this is a liberal act on the part of his lordship, and I hope you will approve of the same by an expression of opinion before we part. (Applause.) It will, I am persuaded, be a credit not only to you as shareholders, but to the mine, and the working of the mine, and will benefit all shareholders hereafter. I am quite satisfied of that. (Hear, hear.) Well, now these have been very hard times indeed. I remember the time, in April, 1873, we sold Tankerville ore at 17. 2s. 6d. We sold in June last (the lowest price obtained) at 7. per ton. That is exactly 10. per ton less, and that is on our produce of 100 tons per month 10000., or 12,000. a year. That is a very serious matter. It is equivalent really to no less than 12. per share, which would have been in your pockets.

A SHAREHOLDER: You do not put the case very fairly as an average.

The CHAIRMAN: Those are the highest and lowest prices. Now we will go to the subject.

A SHAREHOLDER: What about the cost of production?—The CHAIRMAN: The cost of production is greater now than it was, as we are deeper in the development of the mine.

Another SHAREHOLDER: I think the shareholder had better wait till you have made your statement. (Hear, hear.)

The CHAIRMAN: We will take the medium price—that is, 12. per ton. Now, if we got that we should give very good profit indeed—give you good dividends, and increase our payments to Earl Tankerville as well, and I hope we shall do so. But is there any hope that we shall have this state of things again? During the last six weeks the price of lead has gone up 2. per ton. We will do it again. How would that be? There has been during the last six or eight months a great revival of trade in America, and that is increasing rapidly. America got crippled and went down the hill in 1874. We began to follow about six or eight months after, and we have continued to go down ever since. They produced a large quantity of lead, and they had to send things out of their country as they do now, and they sent lead to China, Japan, Russia, and elsewhere, and to countries that were our customers at that time and had been our customers for many years. Always in the spring, since 1850, when I was connected with the Tamar Works, we had large orders for these places; but America took upon herself the last few years to shut up, and to other nations, as the price came down, and has remained there, and I believe there will be a great rebound in the near future. A great revival of trade in America, and that is increasing rapidly. And the produce required is now 70,000 or 75,000 tons, and I think they will require 100,000 tons, or a great deal more than that I fancy in the next 12 months. So that it is possible—very probable—that even to America we may get some of our export trade back again. It may be only a small quantity, but if it comes to that it will be a very satisfactory thing for this country. At any rate, there is no question that we shall get our trade again with China, Japan, and the East generally, and other countries; and, therefore, I think there is some very good hope indeed that we may have the price of lead ore and blende up some 20s. a ton. A shareholder asked me yesterday—What do you think the price of copper will be? Do you mean 4. or 5. per ton in the next 12 months? I said "it may gradually go up in the next 12 months 5s. a ton," and that would be the middle price between 7. and 17. That would bring us to 12. or 13. per ton, and supposing we got that I think Capt. Waters will tell you we should get very good profits indeed. We must live in hopes that that will be realised. I believe it will. Russia has been in the market for some time buying lead, and is buying now in very large quantities. There is no question but that we shall see a great revival in trade, not only in lead but in iron. America started the other day by buying scrap iron in pieces all over the country, and they are shipping it. There is no duty to pay on the scrap. Lead at the present time is about 20s. per ton in America. Mr. Wilson, who is a director of the Richmond Company, will know the exact price.

Mr. ROBERT WILSON: It is about 4 1/2 cents.

The CHAIRMAN: That is about 200. per ton at New York. Well, people will not give that price in China, Japan, and elsewhere while they can get it here in England at 15s. to 18s. per ton; but I have advised here, gentlemen, which would rather astonish some of you—advices which any of you can read. They are from New York and St. Louis. I am one of the directors of the Missouri Lead Mining and Smelting Company, near St. Louis, and I know something of what is going on there, and I believe there will be a great rebound in the near future, and although I have not so much hope as I had with regard to copper—that there will be a revival in the price of copper at no distant period. But if you were to read the extraordinary accounts coming from America of the ships building and the ships coming over with provisions you would be surprised. If they bring us provisions surely they will take something from us, and if they do that it must increase trade rapidly. (Hear, hear.) The building that is going on all over America at the present time is something enormous, and they must have this lead. Well, gentlemen, I hope I have given you some slight hope in the future. Now, with regard to the mine, I have given you some slight hope in the future. The mine is in the best position, which is from a shaft something like 200 fathoms. The shaft is sunk in the centre, and on either side there is the rock bearing ground producing lead ore. We have had, as Captain Waters said, the ups and downs of mining; fluctuations have been very great, not only with regard to prices but with regard to produce also. But certainly I think we may say with regard to the development as presented to-day there is some hope that the mine will do a great deal better than it has done during the past twelve months. But you must remember that we are not dependent on one lode, but on about 20 lodes within all over the country, and they are shipping it. I think certainly there is a better future for the mine. I have seen a paper stating that Snailbach—our neighbouring mine—has sold about 3,000,000. worth of ore, and it is still a good mine. It has had its ups and downs, but it has paid dividends for about a century. I have seen that in print. We have sold 180,000. worth of ore since 1870. We have given something like 60,000. or 70,000. in dividends, so I think, on the whole, that is not a very bad statement of accounts. But I want to call your attention to the fact that our property was selling in 1870 to 1871 for between 300,000. and 400,000., and it has since, I am told, been giving away for 35,000. I cannot see why it should have gone up to 327,000., and now be down to such a low price, because these are only temporary. The temporary depression of the mine is going on, and with this difference—that you have about three times the machinery now you had at the time when the higher price existed. Down to the 42 fm. level we had lodes worth 5 to 7 tons of ore to the fathom, and down to the 112 fm. level we had lodes worth 20 and 25 tons to the fathom—lodes 9 feet wide. Now, you will see that the dip of the ore ground is opening out very considerably, and what I want to show is that at that time—in 1871—there was a run in lead mines. I remember when Van went from 4. to 40. within twelve or eighteen months (400,000.), and after that an agent inspected the property, and in three weeks it went from 40. to 80. or 85. per share—to just on 1,000,000. per share. Who is to say that these things will not occur again. Our lead mines and tin and copper mines in this country are looking well, but it is the price of the produce that militates against us—what I mean to say is that at that time we were selling 1800 tons of ore, and we gave 12,000. profit in the year. Now, if we have success and make discoveries it will not be a very great deal to get 500 tons more than now of ore in 12 months, and who is to say that the property will not again be of the value that it was? We must hope it will be. There it is, and we must take it as it is. The Chairman of the Great Western Railway said the other day—"We must look at facts and figures as they are, and live in hope." My hope is very great; my faith is very great. My motto is—"Mea gloria fides."—"My glory is faith." I live in hope and faith that we shall have a very big mine here. I am pleased to see such a very good attendance here to-day, and I shall be happy to hear any remarks from any of the shareholders. Therefore, I beg to move—"That the report and accounts now presented be received, adopted, printed, and circulated amongst the shareholders." (Applause.)

Mr. CAFFEY seconded the motion with much pleasure.

Mr. R. EDRIDGE said the report was of a more satisfactory character than those which had been presented at the last two or three meetings, and he hoped the anticipations of the Chairman would be realised. He asked how it was that the lead sold to April was shown in the accounts, while the monthly costs were only charged to the end of February? Of course the difference in the price of lead made a very heavy item in the revenue account; and the Chairman's remarks on that matter were no doubt perfectly right. He noticed that the expenses of labour and materials were 12000. less than in the previous account, and he hoped that the materials were purchased as cheaply as possible.

Capt. WATERS, in reply, said, with respect to the costs and the returns, the lead raised in February was sent to market in April. They could not break the ore, and they had to wait until the April sale of the mine. The April sale of lead was really the result of the working in February, hence the returns were shown to a later date than the costs.

Mr. EDRIDGE said the explanation was perfectly satisfactory.

Mr. WARRINGTON asked how it was that though the accounts were audited in May they were not presented till the beginning of September?—The CHAIR-

MAN said the delay was at his special recommendation, as he was desirous of presenting the reduction of royalty to the shareholders at that meeting. (Hear, hear.) Mr. T. D. GIBSON asked whether it would not have been as well to have kept down the output more than had been done? He found that the average price realised for the ore was 9s. 13s. 3d. per ton, while the cost had been about 16s. 17s. per ton. They had sold 1080 tons, but if they had only sold 600 tons, and had reduced the labour costs, salaries, and expenses in proportion they would have lost instead of 1000 guineas only about 8000. No doubt the directors were aware that the Van Company had discharged a number of their men, reduced the salaries and the fees, until lead should reach a better price. He thought the great mistake in Tankerville was paying the last dividend. He noticed that Mr. Wilson was present at the meeting, and he thought that boded prosperity to the company. Though upon one occasion he opposed Mr. Wilson, he always believed him to be a most honourable and useful man. With regard to the report he was pleased to find that they were entering upon brighter times. No doubt if the returns were increased and the price of lead improved the deficiency shown in the accounts presented would soon be made up. (Hear, hear.)

Capt. WATERS said his "screw" had been reduced twice, as had also the other agents' salaries, and the wages of the smiths, carpenters, pitmen, engine-men, launders, and the people at work on the dressing floors. The costs were now 70s. as compared with 1000. or 12000. He thought the shareholders present would give him credit for knowing what was the best to be done for the mine. (Hear, hear.) He was delighted to hear, and the men were almost as well-off at 14s. as they thought that was the proper place to make remarks, and of giving an opportunity to those concerned to reply to those remarks. The men had had their wages reduced from 23s. a week to 14s. or 14s. 6d., and he did not think they could go much lower.

Mr. GREENSILL said he was speaking of reducing the number of men, not the ratio of wages paid to them.

Capt. WATERS thought it would be very unwise to reduce the output further. They were bound to do a proper amount of exploratory work, or else when the times got better they would not be able to avail themselves of the improvement, and increase sales of ore.

Mr. WILSON remarked that if the costs were reduced the output must be reduced, and if exploratory work ceased the mine would ultimately stop; therefore, exploratory works must go on.

The CHAIRMAN added that the costs had been reduced 2000., but the reduction in the price of lead made them suffer to the extent of nearly 30000. Reductions had been made in every quarter, and he would challenge any mine to show better value for the costs incurred. (Hear, hear.) He thought the costs and the returns were very creditable to the management. With regard to wages, the men were paid the honest, fair average wages, which were now about 14s. or 14s. 6d. per week. They appeared to be low, comparatively speaking, but then provisions of all kinds were much cheaper, and the men were almost as well-off at 14s. a week now as they were at 17. when they had to pay 9s. 13s. 3d. for a loaf of bread.

Captain W. FELL WOODS asked if the new lease would involve them any large additional expenditure?—Captain WATERS replied that he did not think more than six or eight men would be required in addition to the present staff.

The report and accounts were then unanimously adopted.

Capt. WATERS then pointed out on the plan the position of the various workings, and said that if the shale bunch in the 206 continued all the way to surface—as all the bunches in Snailbach and Roman Gravel did—it would give them a very large body of ore. The 153 fm. level was now entering the bunch, and he might have valued it at 1 ton or 2 tons, per fathom, but he was not sure. He did not think it would be wise to drive a series of levels before this was proved. This bunch of ore was entirely distinct from the bunch that made all the profit; but while 16 fathoms was the longest run of ore they had in the rich time of the mine, they had now driven 65 fms. in the 206 fm. level, and he thought the mine looked more permanent than it ever did previously. (Hear, hear.) With respect to the pump sump, when he first went into Shropshire that vein was held up to him as being the lode to the Tankerville pipe of ore. It was 50 fathoms south of Tankerville shaft. There were big pumps of 22 in. diameter found there, but whether the old men got the water out by hydraulics or compressing he could not say. The curious valves used 200 or 300 years ago were to be seen in Shropshire still. They had a magnificent run of ore, so it was reported. He had been down into parts of the mine, and had found splendid traces of ore. He apprehended that Tankerville had drained the source of the water from this mine, for the water only rose 3 ft. from Saturday to Monday, whereas it was a matter of difficulty to drain the mine when Mr. Jones had it. At one time the water from this mine used to form a millstream. He believed, judging from the specimens of ore raised (these specimens were exhibited) that they would have a rich pipe of ore there, and if he had the money he would work this part of the property himself, independent of Tankerville. The Goodish Tuesday was worked on tribute formerly, and every fathom yielded 2 tons of ore, and he believed that when this vein met the pump sump in depth they would have a very rich lode. They had an engine and sufficient pumping and winding machinery to do all that was required, and he would like to run an adit level to bring the stuff raised out at the present Tankerville workings.

The CHAIRMAN said the great feature in this was that they had, according to the terms of the agreement, to sink a certain depth, and if they did not find the ground productive they had to drive a cross cut to try the other lode, and after that, if they liked, they could abandon the workings, but his own impression was that the junction of the pump sump and the Goodish Tuesday would give them a splendid mine. The point they had to sink to was 50 fms. from surface, but a good deal of this was already accomplished. Operations had to be commenced by next Monday, but they had already been begun. The water had been pumped out, and the specimens of ore shown on the table had been raised. (Some splendid specimens produced.)

Mr. CREMONINI asked what would be the probable outlay of the sinking?—The CHAIRMAN: Six men or so, at about 14s. or 14s. 6d. a week each.

Mr. CREMONINI: How long will it take to do it?—The CHAIRMAN: That depends on whether the ground is soft or hard.

Mr. B. YORK proposed—"That the thanks of the meeting be given to Earl Tankerville for his liberality in conceding a remission and reduction of royalty, and that a copy of this resolution be sent to his lordship through his representative, Mr. T. M. How." This resolution needed no comment from him after what had been said with respect to the liberality of his lordship by the Chairman. Earl Tankerville had met them in a very fair and liberal spirit. Their Chairman had exerted himself beyond measure, and deserved great praise for his exertions, which had been crowned with success. (Applause.)

Mr. EDRIDGE seconded the proposition and endorsed Mr. York's remarks.

The proposition was carried by acclamation.

Mr. GIBSON, in reply to Mr. EDRIDGE, said the directors had always retired alphabetically, and that was why Mr. Cremonini, one of the last directors elected, retired at that meeting.

Capt. ALFRED, of Dyliff Mines, proposed the re-election of Mr. W. Cooper as a director, and in doing so referred to the zeal and ability which Mr. Watson (the Chairman) had always displayed in the interests of the company.

Mr. YORK, in seconding the proposition, said Mr. Cooper had devoted much of his time, since he had joined the board, to the affairs of the company, and had upon many occasions come up to town at great inconvenience, on the business of the mine. He could bear testimony to the indefatigable exertions, and to the knowledge which he brought to bear on the affairs of the company. (Hear, hear.)—The proposition was carried unanimously.

Mr. EDRIDGE then proposed the re-election of Mr. Cremonini as a director, whom he considered a very useful man to have on the board.

Capt. W. FELL WOODS seconded the proposition.

Mr. E. D. SHAW said he felt bound, though with much regret, to move that Mr. Cremonini be re-elected a director of the company. This was the general feeling of the board, and if it was desired he would state the reasons, but he did not wish to import an element of discord, which had much better be avoided. (Hear, hear.)

Mr. WILSON thought it should have been stated in the notice convening the meeting who were the retiring directors.

The LONDON MANAGER replied that that course had never been pursued; and, therefore, was not an exception on this occasion.

The CHAIRMAN said, in reply to a question, that he had been to the mine three or four times in the past year, and some of the other directors also visited it occasionally.

Mr. CREMONINI said he had taken a great interest in the affairs of the company. He had tried to introduce economies, and had done everything he could to benefit the company. But he found that instead of making a profit they were getting behindhand. He did not say this was altogether the fault of the board—(Oh!)—but it was principally due to the fall in the price of lead. He was opposed to the borrowing of money, and knowing that the meeting of shareholders would soon be held he advised that their consent should be obtained to any borrowing. From that moment he had been treated as a stranger and not as one of the board. He could have got the company coal at 10s. per ton, but he found that a contract had been entered into for six months at 13s. per ton. He had urged the directors to go down to the mine to look into things, and prevent them going from bad to worse, and he had offered to go down himself, but no visits were made. He had asked that the meeting should be held at the mine, at Shrewsbury, or at Wolverhampton, but this did not suit. He said proxies had been applied for to be used against him.

The CHAIRMAN denied that there was any such intention. Mr. Shaw, a director and one of the largest shareholders in the company, considered that a deliberate insult had been offered to him by Mr. Cremonini, but had the latter gentleman apologised in a proper way the matter might have been settled. He (the Chairman) was not present when the occurrence took place, but they could not go on without harmony at the board. (Hear, hear.) He had nothing to say against Mr. Cremonini, nor, he believed, had Mr. Cremonini against him (Mr. Cremonini: No), but Mr. Shaw would retire if Mr. Cremonini were re-elected, and the other directors would follow him.

Mr. CREMONINI stated that he had said he was sorry if he had given offence, but he was not going to beg for the position of a director.

The CHAIRMAN remarked that the interests of the company must not be allowed to suffer owing to personalities. (Hear, hear.)

Mr. E. D. SHAW said the great sin of the board was that the directors did all the work, and Mr. Cremonini all the talk. (Laughter.) Since Mr. Cremonini had all the work, he had never scrutinised a bill, though he had shown great interest in the prices the shares had produced. Mr. Cremonini was not prepared to make the slightest self-sacrifice for the mine, and when, to meet existing liabilities, the directors offered to make themselves personally responsible for the amount which they were unanimous in believing it to be necessary to raise among themselves, he not only refused to join his colleagues in the guarantee, but had a special minute entered in the book to show that he had not joined in the guarantee. There had been no proposition to borrow money beyond all the directors, except Mr. Cremonini, having agreed to lend an amount to pay off what was already owing to merchants. Mr. Cremonini decided to assist at all. Mr. Cremonini was asked to retire, but he declined to do so, and had exhibited very ungentlemanly conduct to the Chairman, the secretary, and to his colleagues, and to himself (Mr. Shaw) in an especial manner. With regard to visiting the mine, he had always supported any proposition that the Chairman should visit the mine, for he was a practical miner, but whether Mr. Cremonini or himself visited the property they could not make any suggestions as to what should be done, and the company would not be benefited a bit by their journey. If he could see any practical result to be derived by a visit to the mine he would be very pleased to make it. Since he had joined the board, Mr. Shaw had increased his holding by 100 shares, and he was prepared to hold them. They were well-served by the Chairman for the great zeal he had displayed in directing the affairs of the company. (Applause.) If Mr. Cremonini or any other gentleman could get them coals at a lower rate than they were now paying no doubt the directors would be happy to make a contract for six or twelve months. (Hear, hear.)

Total 1230 24361 11

NO SALE on Thursday next, September 11.

Mining Correspondence.

BRITISH MINES.

INSTANTANEOUS WATER HEATER.—A simple little apparatus has been introduced by Mr. T. Fletcher, of Warrington, in connection with his solid flame burner. Above the burner a long coil of small tubing is enclosed within a case, so that when the burner is lighted the tubing is heated, and the temperature of the water is regulated by the speed at which it is permitted to flow through the coil. The apparatus is a good companion to his injector gas furnace, hot-blast blowpipe, and other apparatus with which his name is connected.

per fathom. No. 1 pitch is worth 1½ ton per fathom. No. 1 pitch in the 63 south is worth ¾ ton per fathom. No. 2 pitch south is also worth ¾ ton per fathom. Pitch in bottom of the 50 north is worth ¾ ton per fathom. Pitch in bottom of 50 south is worth 18 cwt. per fathom. Pitch in bottom of the 43 north is worth ¾ ton per fathom. Pitch in bottom of the 30 south is worth 12 cwt. per fathom. We have nearly completed securing the Wood engine-shaft, and have now some men clearing deep silt and the 50 fm. level on our side of the Roman Gravel boundary, the late heavy floods having caused an obstruction at each point.

ROMAN GRAVELS. Arthur W. Smith, Rock Lake, Wis. The south engine-shaft is down 12 tons. 2 ft. below the 110: ground favorable. 4: 8: progress. The 110 north is down a lode 2½ ft. wide, composed of carbonate of lime and lead ore. We expect an improvement in this end shortly. The 110 south is up to the coal branch, which has disordered the lode for the present, but we shall soon be into ore ground here. The 95 south is worth 2 tons per fathom. The 80, north of old shaft, is worth 3 tons per fathom. The 80 south, on footwall part, is worth 1 ton per fathom. The hanging wall part being also worth 1 ton per fathom. The 55 south, on the

middle part of the lode, is worth 2 tons per fathom. The 40 south is worth 1 ton of lead ore and 1 1/2 ton of blende per fathom; lode 6 ft. wide. The stopes throughout the mine are yielding their usual quantities of lead ore. We shall sample 150 tons lead ore to-morrow next week.

SOUTH CONDORROW.—William Rich, William Williams, Henry Abraham, Sept. 3. The 93 east, east of King's, is worth 6 ft. per fathom. The 80, east of King's, is worth 8 ft. per fathom. The 70 east is worth 7 ft. per fathom. The rise in the back of this level is worth 50 ft. per fathom. The 60 east is now worth 8 ft. per fathom. The lode in the back of this level is worth 12 ft. per fathom. The 40 east is worth 7 ft. per fathom. The 30, west of Plantation shaft, is worth 12 ft. per fathom. The 20, west of this shaft, is worth 10 ft. per fathom. We are busily engaged in fixing shaft tackle and pulley-stands, with the view to haul from the Plantation shaft with steam-power.

SOUTH DAREEN.—H. James, Sept. 3. We are going on well with the working of the water; it is now down about 6 ft. below the 80. To-day we are drawing ore stuff. We shall have to draw water again in a day or two, when all stuff broken is brought to the surface. Every effort is being made to get the water out as soon as possible, and all going on well. The weather is now fine, and more settled.

SOUTH DE EREBY MOUNTAIN.—W. Bennetts, Sept. 4. We are pushing on with the sinking of the engine shaft, where the lode continues of much the same character as reported last week, a very strong, promising looking lode.

SOUTH TOLCARN.—Rich, J. J. West, Sept. 3. The shaft sinking below the 100 is divided by a patch of clay, but we think in sinking a fathom or two the clay will wear out and the parts of the lode will unite and form a compact lode. The rise in the 36 east yields good stones of copper. The winze sinking below the adit to unite with the rise referred to also carries good stones of ore.

TALYBONT.—Thomas Glanville, Aug. 30. We shall to-morrow send from Llanthangel Station, 9 tons of lead ore to Messrs. Sheldon, Bush, and Co., for sale. In the level driving west of new shaft the lode is producing some lead, but not enough to value. In the winze sinking to come under the old workings on the old lode we found nice stones of lead dispersed through the rock, which argues well for the lead we shall meet with when we get to the proper depth. We shall sink another 2 yards when we cut into the lode.

MAR (Silver-Lead and Fluor-Spar).—R. Goldsworthy, Sept. 4. There is no particular change in any of the bargains since my last report; no lode has been taken down in the 37 south, driving being carried on by the side of the lode. We have not intersected anything in the 7 cross-cut west, but the ground is changing, and is thickly impregnated with muddle and small spots of lead; this looks well that the lode when intersected will be found valuable.

TEESDALE.—John Black, Aug. 28. West End Forehead: No material change, the vein a little narrower and rather poorer. West End Stope No. 1: This working is improving. The overlying plate that has so much interfered with the lead ore for the last few fathoms seems to be going off to the east side, and the lead ore is consequently setting up above better than it has done for a long time. West End Stope No. 2: There was a little more ore in this working, and it seemed as if we were only commencing to get at the lead ore in one part of the working. West End Stope No. 3: This is out of the rise going south. Very little more has been done but shoot the bottom down and prepare a hopper for it. It will ventilate the rise and get some excellent lead ore as well. The east branch is looking very well. There is now ore on the east side, which is getting stronger and stronger. When the roof gets shot down it will reveal more lead ore than is now visible. Dressing only moving slowly; cannot get the bowse out fast enough for them.

TEMPLE.—Sept. 3. In cutting down the lode in No. 3 level this week we find the lead bearing part split into two branches, one running to the north and the other to the south, with about 4 ft. of lode between them; the produce in lead cannot just at present be stated at more than 10 cwt. per fathom, but the appearance of the end is very promising. In this end (No. 3 level) the stopes maintain their average produce very well, but in No. 1 no lode has been cut down in either stop since the last report, the men being engaged in cutting down the ground by its side previously to stripping down the lode itself. The masons are engaged in building the new water race, and if the favorable weather which we are now having continues rapid progress may be made. A large quantity of good stone has been quarried ready for the masons, and other surface operations are progressing satisfactorily.

WEST ASHETON.—J. Garland, Sept. 3. In the 40, driving west, there is no change in the ground nor in the lode to notice; the lode is very small, and of no value. Good progress is being made in driving. The lode in No. 1 stop in the back of this level is worth 1/2 ton of lead ore per fathom; the ore is lengthening as we go up. No. 2 stop is without change; lode worth 1 ton per fathom. The rise in the back of the 50 west is going up slowly, the ventilation being bad. There is a little improvement in some of the pitches in the back of this level. But little has been done in the cross-cut near the 60 end since last report, the men having been employed in repairing the adit. The new pitch west of the old ground in this level now produces some fine stones of tin; it has much improved, through, and found to consist mainly of quartz, with a sprinkling of lead ore; the men are now again driving by the side of the lode, and the present indications lead us to hope to see an improvement when we get a little from the slide. We sampled on the 27th ult., for sale on the 4th inst., 40 tons of lead ore, and on the 30th ult., for sale on the 8th inst., 60 tons of blende.

WEST HOLWAY.—R. Rowlands, Sept. 4. I am pleased to tell you that we are making excellent progress in sinking the shaft, and everything is going on well.

WEST VOR.—S. Harris, Sept. 4. We are progressing favourably with the sinking of the winze below the adit level, which is now down nearly 4 fms. The lode continues about 4 ft. wide, producing some fine stones of tin; it has much improved in the past week. The kiln about the lode is highly congenial, in which we find small rich branches of tin. This I regard as a good feature. The water has a little increased during the past week, which I rather expected, as the lode is more porous. I never saw such good stones of tin as I have before taken from West Vor mine this morning.

WEST WHEAL PEEVOR.—W. T. White, Sept. 3. During the past month we have divided the lift in the engine-shaft, consequently the shaftmen have not sunk more than 2 fms. this month, on account of being engaged about the lift. Sinking can now be carried on more effectually, and we still feel assured the 20 will be reached at the time specified—Nov. 1 next. The 10 is now driven west of cross-cut, on south part of lode, 72 fms.; the lode for this drive has been worth about 5 ft. per fathom, which is now about its value in the present end. The cross-cut driving north of this part of the lode is now in 2 fms., and we expect to intersect the other part of the lode in about 2 fms. further driving. Yesterday we met with a very important discovery in the trial shaft, which is about 70 fms. west of our present workings, although not more than 9 fms. below the surface some fine stuff is being produced. I assayed a sample from a portion of the stuff, and it gave produce of 2 cwt. of black tin to the ton of stuff (or 10 per cent.) This is another proof of the productiveness of this valuable lode, which traverses the entire length of this mine.

WEST WHEAL TOLGUS.—Sept. 4. The lode in the 155, west of Taylor's shaft, is 4 ft. wide, and yielding 1 1/2 ton of copper ore per fathom, but the ground is harder for driving. The lode in the 145, west of shaft, is 3 ft. wide, and yielding 1 1/2 ton of ore per fathom; the lode is smaller, and not so promising as it was a few days ago. The lode in No. 2 winze, in the bottom of this level, is 4 ft. wide, and yielding 2 tons of ore per fathom. The lode in the 145, east of cross-cut, is 3 ft. wide, and yielding 1 ton of ore per fathom, and improving in appearance. The ground in the 135 cross-cut south is a little harder, but the men are making good progress in driving. The lode in the 125, east of cross-cut, on south part, is 5 ft. wide, and yielding 3 1/2 tons of ore per fathom. The lode in the 120, west of cross-cut, is also 5 ft. wide, and yielding 4 1/2 tons of ore per fathom. The stopes in this part of the mine are producing their usual quantities of ore. There is no change to notice in either of the levels driving west of Richards's shaft since the report last Saturday for the account meeting.

WHEAL AGAR.—E. Moyle, W. Hambly: The engine shaft has been set to twelve men, to sink at 50 ft. per fathom. We hope to sink this with the boring machines as soon as the 225 is extended east and west of cross-cut a few fathoms. The lode in the 225 has been cut through, and is 20 ft. wide, worth 40 ft. per fm. The boring machines have driven 7 fms. 1 ft. in, during the month. We hope to extend this during the coming month. The lode is becoming better accustomed to their work. The 215 has been extended 13 ft. A winze to sink below the 215 set to nine men, at 2 1/2 ft. per fathom. The 235 to drive east by boring machines; the lode is worth 30 ft. per fathom. About 300 tons of stuff have been broken in the bottom of the 205; the lode is worth 35 ft. per fathom; set to fifteen men, at 6 ft. per ton of stuff. The rise against the new shaft, in back of the 30, is still very hard; set at 20 ft. per fathom, to four men. The shaft to cut down below the 60 to four men, at 6 ft. per fathom. The steam stamps are at work on old burrows until the floors get settled and everything filled. Machinery all working well. The long burning house flues, notwithstanding the wet weather, answer better than was expected.

WHEAL CREBOR.—John Andrews, Sept. 2. In driving south at the 120 we have cut the north wall of the new lode, and we hope in a day or two to communicate with the winze. In driving west from the bottom of the winze the lode has improved, and we have now cut into it from 10 to 11 ft., and no north wall yet, but so far as cut into the lode is worth 50 ft. per fathom. The lode in the 108 east is 3 ft. wide, worth 1 1/2 ft. per fathom. The lode in the 100 east of the 108 cross-cut, has been improved, and is now 8 ft. wide, and worth 60 ft. per fm.—A splendid course of ore. In driving west from the lode in the 108, we have cut a splendid course of ore. In driving south at the 48 the ground is favourable for progress, but no more lode has yet been met with.

WHEAL CREBOR.—John Andrews, Sept. 4. In driving west from the bottom of the 108 winze we have now cut into the lode 12 ft., and no signs of the north wall yet, but so far as cut into the lode is worth 60 ft. per fathom. In the 120 cross-cut we have cut into the north part of the south lode about 1 ft., which corresponds with the north part of the lode driving west from the bottom of winze, which is composed principally of rich yellow copper ore and quartz, and as the lode driving west from winze is now worth 60 ft. per fathom, the longer we work before we effect a communication between the two points the more valuable the lode will be, as every foot in width will add fully 5 ft. per fathom to the value of the lode, and at the rate we are opening out the lode will be worth 70 ft. or 80 ft. per fathom in a few days time; in fact, it is already a quarry of ore. The new south lode driving east of the 108 cross-cut is worth fully 60 ft. per fathom; the lode is 5 ft. wide, 6 ft. of which will go to pile for ore. The fact is the mine is opening out splendidly, and is increasing in value every day.—P.S.: The two points valued at 60 ft. per fathom each are 35 fms. apart.

WHEAL GRENVILLE.—T. Hodges, Sept. 3. Very little has been done in the bottom levels this week. We had to stop our engine in order to take down a piece of ground in the 140 fm. level, to make make room for the feed-off box; this is now done, and the water is 5 fms. below the 150 fm. level. All well the bottom levels will be drained by to-morrow. The 150 east end is now worth 10 ft. per fathom. The winze in the bottom of the said level is drained dry, so we have returned the same to day. The 140 east end is worth 8 ft. per fathom. The stopes, on the whole, are turning out as usual.

WHEAL PEEVOR.—W. T. White, Joseph Pryor, August 30. Setting Report: The sinking of the engine shaft below the 80 is vigorously carried on. The 80 to drive west, at 5 ft. 10 in. per fathom; lode worth 40 ft. per fathom. The 70 to drive west, at 7 ft. per fathom; lode worth 14 ft. per fathom. The 60 to drive west, at 5 ft. 10 in. per fathom; lode worth 22 ft. per fathom. The 48 to drive west, at 6 ft. 10 in. per fathom; lode worth 16 ft. per fathom. The 36 to drive west, at 5 ft. per fathom; lode worth 40 ft. per fathom. The 36 to drive east of main rise, at 6 ft. 5 in. per fathom; lode worth 8 ft. per fathom. The 36 to drive west of No. 1 cross-cut, at 5 ft. per fathom; lode worth 10 ft. per fathom. The 36 to drive east of No. 1 cross-cut, at 6 ft. 10 in. per fathom; lode at present unproductive. Rise in the back

of the 36 west, at 7 ft. per fathom; the lode is worth 15 ft. per fathom. The 28 to drive west, at 5 ft. 10 in. per fathom; lode worth 13 ft. per fathom. Rise in the back of the 28 west, at 8 ft. per fathom; the lode is worth 11 ft. per fathom. Main rise in the back of the 18 west, at 6 ft. 15 in. per fathom; lode worth 13 ft. per fathom. We expect soon to communicate this with the deep adit level. Winze to sink in the bottom of the deep adit level, directly over the main rise, at 8 ft. 10 in. per fathom; lode worth 10 ft. per fathom. Cross-cut to drive south, east of engine shaft, at 5 ft. per fathom. We also set six stopes on tutwork, at prices varying from 3 ft. to 6 ft. per fathom; lode worth in each 12 ft. per fathom. There were also fifteen pitches set on tribute, at tributes varying from 4 s. to 9 s. in 11. The mine continues to open up remarkably well throughout, and large quantities of tin are being returned, and with the improved state of the tin market good profits are being made.

WHEAL UNY.—Wm. Rich, M. Rogers, Sept. 3. We have cut a lode or branch about 15 in. wide in the 172 cross-cut south, carrying good stones of tin. We have begun to open out south to prove it. The 172 end, west of old engine shaft, is improving, and is carrying low-quality tinstone. The 160 west is worth 10 ft. per fathom. The 160 east is letting out a great deal of water, and yields a little tin. The 130 end west is worth 4 ft. per fathom, and looks likely to improve. The 130 end east has an improved appearance, and carries some good tinstone.

CENTRAL FOXDALE MINE.

August 23.—Engine-Shaft: In the 120 fm. level east the portion of the lode carried in the driving is about 8 ft. wide, and contains a nice mixture of lead ore, and is improving as the level advances; the ground is also easier for progress. There is yet from 6 to 8 fms. to drive to reach the perpendicular under the winze in progress in the level above, and in which there is a splendid run of ore, therefore our expectations are that a rich discovery of ore will soon be made at this point. A cross-cut is in course of progress driving north to prove the character and value of the lode; at present the ground is hard, but congenial for the production of lead ore. Upon completion of this driving a cross-cut will be put out south for the same purpose. In the 105 fm. level east the lode is worth 10 cwt. of lead ore per fathom, and the ground favourable for progress. The communication of the winze from the 60 with this level is now completed, and the ventilation is all that can be desired. In the winze sinking below this level the lode is from 12 to 15 ft. wide, 6 ft. of which is worth 4 tons of lead ore per fathom, and the remainder is richly charged with ore throughout, looking well and most encouraging for the 120, which, as stated above, is from 6 to 8 fms. short of being under this point. No. 1 and 2 stopes in back of this level are worth 2 tons and 1 1/2 ton of lead ore per cubic fathom respectively. The drivings and stopings from No. 1 winze below this level are yielding ore in paying quantities, and promising for an improvement. The tribute pitch in back of the 90 fm. level east is only poor at present, and the men are working vigorously in expectation of a favourable change. Surface operations are progressing with the usual regularity. On Tuesday next we shall sample 60 tons of lead ore.—W. T. HARRIS.

FOREIGN MINES.

ST. JOHN DEL REY.—Telegram from Morro Velho, dated Rio de Janeiro Aug. 20. Produce nine days, second division of August, 9740 oits.—3784; yield, 8-8 oits per ton. Quibab: 200 tons stamped in 16 days, yield, 2 1/2 oits per ton.

DON PEDRO.—Mine Captain's report, dated July 31. General Remarks: The ore has been principally derived from Bryant's stopes and the lode met with and traversed by exploratory rise from stopes to surface. No improvement to note has taken place in Bryant's stopes, and the ore derived from the new lode at and near surface has been so intermixed with country, in consequence of the crushed state of the ground coming off in large portions from cross and smooth heads, that a good deal of difficulty was experienced in endeavouring to keep the first rise clear so that the stuff could pass, and ventilate the stopes beneath, and was quite impossible to separate the country from the ore broken from the lode. Anticipation of this, another rise was started about 12 ft. eastward from the first rise, and the new one was secured with timber as we rose. This new rise was holed to surface this morning, so we hope to be able to separate the greater portion of the country rock from the ore broken from the lode in future, when we anticipate better results. Some good pick samples have been obtained from the various branches which compose the lode, but the richest we have had yet from here was taken this morning, about 12 ft. from surface, from a yellow branch of ferruginous quartz mixed with clay and jacting; the lode fully maintains its size and value. Good progress is being made in No. 2 incline shaft; the double line of rails has been extended to the breast, and both wagons working well, and several props put in, &c. The shaft below continues full of debris and timber crushed as far as can be seen. Several sets of laths have been renewed in the new level. Good progress is being made in the repairs of Vivian's shaft, and it is now in good repair to within 6 ft. of the adit level.—Drainage: On the 28th a force was placed to disconnect jack-head and puppy-lifts. The country rock in No. 1 incline is now getting pretty well drained to 9 ft. below the 40 fm. level. The pumping machinery and 60-ft. wheel continue to work well. The regos have been kept clean and attended to, and coming in contact with a flooken at the headware of lower rego, the force was removed and this suspended *d pro tem*.

Capt. Vivian reports under date Aug. 4. The produce for July amounts to 888 oits., it being, I am glad to say, some increase on the last, which I am in hopes of continuing from this time forward. The present increase is only attributable to the discovery of a lode by exploring a rise at Bryant's, which I am pleased to state looks very promising for extending, as well as for producing a large quantity of ore, the quality of which is expected to improve as soon as stopes are opened on it. Then we shall be able to prevent the country from the hanging wall mixing with the ore. This at present cannot be prevented, as the whole of the works on the said lode are opened to surface. It has shown some very good samples mixed with the roots of the trees.—**Mine and Drainage:** We continue to keep the water in fork 9 ft. below the 40, and shall in a day or so commence to drain below this point.—No. 2 Incline Drawing Shaft: Vivian's shaft has been put in thorough repair from the bottom to the adit level. It is a strong good job, and will not require any further repairs for a long time to come—in fact, the whole of our upper works are now in excellent condition, therefore as soon as we get to the bottom of the mine operations will be carried on without the slightest interruption.

Mine Captain's report, dated Aug. 10. General Remarks: The ore has been derived principally from Bryant's lode, and ruled of low quality in consequence of cutting down the catas so as to form a facing for convenience of stoping operations on the course of the lode. The lode and country mixed with lode banches or squats is about 10 ft. thick, consequently our timber is put in to carry the whole of the lodey matter. Some of the branches yield fair canna work, others of inferior class. The ground is greatly disturbed with the cross-course, &c. The stoping operations were commenced with timber on the 5th. The lode fully maintains its size and appearance. In the lower stopes in Bryant's nothing new worthy of reporting on met with since our last.—No. 2 Incline Shaft: Fair progress is made considering the vast amount of old timber which has to be dealt with. The best mallow continues full of debris and broken timber. No. 1 incline shaft has been cleared of debris and timber to the 40. The plat and puppy lift are lowered into the whim side to fork below the above named level, and forked 20 ft. from the bottom of the said level. The 40 fm. level has been cleared of debris and old timber into the turn adjoining No. 2 incline shaft, where there is a choke.

New Level: Several sets renewed and level newly timbered in to close juxtaposition with Vivian's shaft. Vivian's shaft newly repaired to the bottom of the water level. The force from here has been only working at intervals, being often stopped elsewhere. In the level several sets renewed.—**Drainage:** Jackhead and puppy lift disconnected, some 18 in. wrought iron pumps being trammed out to the mouth of mine; wood pumps lodged over the water-course in the adit level, and the bottom of the puppy lift, consisting of windhorse, matching, door-piece, working barrel, and 3 ft. 15 in. wrought-iron matching pump; lowered away down whim-shaft to fork below the 40, and succeeded in forking 30 ft. below the above named level. The old drawing lift is apparently full, or nearly so, of stuff, and we are obliged to clean up the shaft as we work, there being such a large amount of debris accumulated here. The 60 ft. wheel and machinery working well. The regos kept clean and attended to. One new wagon made for the adit level, and a pair of axles laid for wagons at Bryant's. The shaft for the double plunger lift, 14 ft. long by 7 ft. 6 in. wide, commenced, and one set put in. In the level from the lobby of the 60 ft. wheel to the shaft fair progress is being made. On Dawson's wheel a large force is employed.

Capt. Vivian reports, under date Aug. 11. Mine and Drainage: We have commenced forking the water to the 50, which we hope to reach in a few days. In doing this we have been obliged to put down a new lift in the driving end of the shaft, the old lift being choked. However, this is not of much consequence, as we had a lift to hand. The 40 cross-cut has been cleared and made perfectly secure from No. 1 to No. 2 incline shaft, and No. 1 incline shaft has been cleared of debris 9 ft. below the 40. Some more repairs are still required below Vivian's shaft. Good progress is being made in clearing and securing No. 2 shaft. Prospects at Bryant's are very encouraging, especially on the new lode intersected by exploring rise. Stoping is commenced, therefore an improvement in the quality of the ore may be expected. No change in any other part of the mine calling for remark.

RICHMOND CONSOLIDATED.—Telegram from the mine at Eureka, Nevada: Week's run, one furnace, \$27,000, from 412 tons of ore. Refinery, \$25,000. Mine steadily improving.

Richmond, Aug. 13. Since my last work in the mine has been carried on with usual regularity. The 200 cross-cut has been drifted 8 ft.; the ground is still hard, but very favourable for striking ore. The 400 south-west cross-cut has been drifted 10 ft. The ground in the present end does not look favourable for striking ore. Work in this drift has been suspended for the time being. The 800 west drift, on the quartzite, has been advanced 32 feet; ground very favourable for drifting. The No. 11 chamber is about the same as last reported. The No. 13 is not looking so well; the ore is very narrow, consequently very slow for extracting. The 600 west from south fissure drift is not turning out so well as we expected, we are extracting some good ore, but cannot yet get any very good continuation in pay ore. We are pushing on exploration in this direction as fast as possible, and hope to find where this ore continues down. All the machinery in the mine and furnaces is in good working order.

PLACERVILLE.—J. Thomas, August 11. During the past two weeks the 4th level has been driven 7 ft., making a total length of 222 ft. The winze from the 4th level has been sunk 7 ft., making a total depth of 18 ft. The 5th level has been driven north 8 ft., making a total length of 38 ft. Extracting ore.

Telegram from Mr. Courtenay, dated Sept. 5.—Cut vein rich in 500 foot level. **COPIAPO.**—J. H. Vivian, July 12. Duquesa: In Fletcher's shaft good progress has been made in sinking; we have now from here about 80 gallons of water daily. The 160 end north is looking very much the same as when I wrote you last, and will yield 5 tons of ore per fathom. This level, north of shaft, is poor. The cross-cut driving west through the lode at the 150 has met with no change; it is a good lode of ore, but very hard for driving—I expect to get through the lode in a few days. The 140 north has greatly improved, and will now yield 5 tons of ore per fathom. The 130 north will yield 2 tons of ore per fathom. I hope in a few days to see some further improvement here, as it is the same shoot of ore that we have in the 140 end north. As you may suppose, this has greatly increased our respect for the shoot of ore, and I continue to look at the vein as at present I shall not require to stop any ore for the month of August, as I consider the prospects of the mine to be very good indeed. There is no change at any other point of operation.—**Chico:** I am very pleased to inform you things are looking a little brighter at the silver mine. The contractor has discovered a branch of silver on the upper lode about 10 metres from the surface. I have seen this morning, and it certainly looks very encouraging; the branch

at present is about 5 in. wide. Better information can be obtained in a few days, after a little break down of the branch.

BIRDSEYE CREEK.—K. G. S. Powers, Aug. 13. I shall not be able to make a final clean-up without making a sacrifice of water before the end of September, and, therefore, shall not cable any report before that time. I have to date ordered 400 cases of power, equal to 800 kegs; this with 60 cases I have on hand will make 920 kegs, which I shall explode in a drift now ready as soon as received. I think I shall be able to get water to clean in this blast, which is in good ground, and as we have a very large amount of bottom gone over this season I feel very sanguine as to final results at the close of this water season.

OREGON.—F. Ennis, Aug. 3. We are through cleaning up at the company's mine, have shipped the dust to U. S. Mint, 240 ozs., and on receipt of mint certificate will make up and forward accounts for July. The clean-up, I am pleased to say, will more than pay us out of debt here.

ISABELLE (Gold and Silver).—Lewis Chalmers writes, Aug. 11. I send you foreman's report for week ended 9th inst., from which you will see that notwithstanding the unfavourable character of the rock our rate of running is improving. Foreman's report, for week ending Aug. 9: I herein submit my report for the week ending above date. Total distance from Monument to face of tunnel, 689 ft.; distance run for the week, 51 ft. The rock is about the same character as in my last report. Drifts and all machinery working well.

BERKARD AND AURORA.—Extract from Capt. Drake's letters, dated July 28, Aug. 9, and Aug. 13, 1879. There has been no material change in the character of the ground since my last report.—Aug. 9. Finance and Estimate: I note your paragraph "Finance," which is anything but a favourable prospect for me to reach the South Aurora ground with the tunnel, as you will see by my July account (herewith forwarded) that my financial position stands thus:—Cash in hand, Aug. 1, \$8673; consumable supplies at tunnel that will be furnished contractors, \$2400; one more remittance from London, \$5000; total, \$16,073. With this amount of money the South Aurora ground cannot be reached with the tunnel, as the distance to be run is about 1680 ft., which will cost the Eberhardt and Aurora Company at the present contract price (17-50), \$18,850. Tunnels and pipe are to be furnished by the company, which will cost about \$2 50 per ft., \$1210; total for labour and supplies for driving tunnel, 1080 feet, \$20,670. Other expenses, manager, offices, watchman, &c. (say), for 6 months, during the time it will take to run the Tunnel to South Aurora ground, \$4,520; state school and county taxes for the fiscal year ending Dec. 31, 1879, upon the E. and A. and W. P. W. Works Company's property, \$2000; which makes a sum total of \$29,190 that will be required within the next five months, provided we continue on with the work in Tunnel; we have in hand \$16,073, leaving a deficiency of \$13,117.

How this amount is to be raised is the question. I think I can safely say that within the next five months I shall receive from Mr. O. Drake for sale of tailings (say) from \$9000 to \$9000. With this amount it will still leave us some \$500 short, and I can see no way to raise it here. If this amount cannot now be raised in London I would advise closing down tunnel until such time as we could get the funds in hand to proceed with the work, or otherwise it will be impossible to carry on the work here without reopening our bills payable account. If the company would furnish (say) 20000 more, everything would go on swimmingly until the South Aurora Company would come in with their money, and then the centre of Treasure Hill could be reached, and a further knowledge of its value (or otherwise) be ascertained. Should the company conclude to close down all operations here, it would be necessary to keep some man here in charge of the property. I will put everything possible under lock and key, still there would be many things that would need looking after. I trust, however, we shall not be obliged to close down just now for the want of so small a sum of money, for should we discontinue work before reaching the South Aurora ground that company would have a lien upon the tunnel and all machinery for the 10000, it has (as per agreement) already paid to our company.

Should we be obliged to suspend operations before reaching the South Aurora line, I would think it better, before we exhaust all our available funds, that we should at present have the tunnel driven to the 1000, which has been agreed to by the two companies, it would then leave our property free for further arrangement. Having considered the prospects so favourable for the directors to be able to raise sufficient money to continue the driving of the tunnel to the South Aurora ground (previous to the secretary's No. 213), I contracted with a party for 300 cords of wood, to be delivered at tunnel at \$8 per cord. I also made arrangements with the California Powder Company for 1200 cases of powder, to be paid for as used, being the same as the previous contract. These are the only two outstanding contracts that I have made. This wood and powder were to be consumed in prosecuting the work in the tunnel.

You say—"And in presenting your estimates kindly remember that no liabilities must be allowed to exist." Whether you will consider the above contract a liability or not I am unable to say. I have given you as above an estimate of cost for running the tunnel per foot as I can, and am pleased to be able to state that the indebtedness of the company here in Nevada August 1 was not \$1, with cash in hand, as above stated, of \$8673. On receipt of this, and learning my financial position, should the directors think it better to close down all work they will please so inform me.

August 18. The following is the progress report for week ending Aug. 16:—Eberhardt and Aurora Tunnel. Distance run to Aug. 9, 3913 feet; run for week ended Aug. 16, 54 feet; for month (Aug. account), 125 feet; total distance to Aug. 16, 3967 feet.—Remarks: No change to note; if anything, the rock is not quite so hard.

SENTEIN.—Aug. 30. The managers report as follows:—We are pleased to tell you we have had a continuance of fine weather lately, and have not been interrupted in any part of our works. The road to the mine is in splendid condition, and it only requires a few hands to keep it so. We have brought down this week 310 tons of silver-lead and blende ores, being an average of over 50 tons per day. Nothing new to report at the mine. Stopes throughout continue to yield the usual quality ore. Several of our miners have been engaged in clearing and securing some of the stopes for some days past; timber for this purpose we have taken from the forest between Ayle and the mine. We have increased our staff of miners a little, as we are not sure we could get a sufficient number at a short notice to break ore enough to keep going the wire tramway when it is fixed. We think it advisable now to take on men as they offer themselves. At La Souquette we are still cutting abroad the bottom level, and expect to reach the reported winze during the coming week. There is still a large quantity of water coming out of this level, but whether from the end or winze it is impossible for us to say at present. We hope to go there one day next week, when we will report progress. There are employed here one Englishman and two natives, but when we begin to drain the winze we shall require a few more hands. The new jig machine at the No. 1 floor is now nearly completed, we are only waiting a few pipes to bring water to supply the machines which are being made at the foundry at St. Giron, and the copper bottom sieves, which are on their way here to begin to work. The beams for the No. 3 crusher are in their places, and the cradles which carry the rolls are fixed. We shall push forward as fast as possible the completion of this machine, as it is very much wanted, we having a large quantity of ore in hand to be treated by it.

LA BAUD.—Sept. 1. Roux: We have cut the 200 plat, and set the cross-cut to drive towards the lode. The 170 metre level south yields a little ore stuff. The same level north is a strong, regular lode, composed chiefly of jointy quartz, but unproductive. The 150 metre level, in the same direction, is being driven in a lode of similar composition to the one above named, showing spots of silver lead ore, and letting out a quantity of water. The 150 south is without change; the ground wet, and the lode unproductive. The ends of the 100 metre level, both north and south of the cross-cut, on Virginie's lode, are poor. The 80 cross-cut east, towards the eastern portion of the lode, is in hard sparry rock. The 80 metre level south yields a little silver-lead ore. The 40 metre level, south of the 80, is a pretty good ground, yielding 1/2 ton per current metre. The 20 metre level north on the counter lode, is unproductive. The adit in the same direction, on the same lode, yields 1/2 ton of ore per current metre. At Mische the tribute pitches are without change to notice.—**La Brousse:** The 140 metre level south produces stones of ore stuff in a strong quartz lode. The 130 metre level, north of Basse's shaft, is in soft unproductive ground. The 100 south continues poor. In the 80 metre level south the lode lets out much more water, which we hope may indicate a change ahead; at the present moment it is unproductive.

FRANAL: The 100 metre level, south of St. George's shaft, yields 1/2 ton of ore per current metre. The 80 metre level north is unproductive. The same level south of shaft, on the eastern part of the lode, yields 1/2 ton of ore per current metre. The 90, south of Grange's winze, yields saving work of low quality. The 70 north yields stones of lead ore and blende at the foot of the level. The same level south is poor. The 50 metre levels, both north and south, are unproductive.—**Surface:** Our dressing has been carried on pretty regularly, but both underground and at surface we have lacked hands, as is usual during the harvest time. Our samplings have amounted to 247 tons. At Lavergne the lode in the adit level continues regular, presenting the same appearance as last month. At Villalongue we sink the shaft to a depth of 11 metres, and having found much water there could be well kept in sinking by hand pumps cross-cut the lode at that depth, where it is 3 metres wide, composed of hard gneiss, and a mixture of quartz, barytes, pyrites, blende, and stones of silver-lead ore.

FORTUNA.—Aug. 20. Canada Inco: The lode in the 120, west of O'Shea's engine-shaft, is very promising, worth 1 ton of ore per fathom. In the 50, west of Abercrombie's shaft, the lode is small and poor at present. The 60, west of Abercrombie's shaft, continues to open good ore ground, worth 1/2 ton per fathom. The 70, west of San Pedro engine-shaft, is opening ground worth 1 ton of ore per fm. The lode in the 80, west of the 70, is large and strong, and yields 1 1/2 ton per fathom. In the 60, east of San Pedro shaft, the lode is unproductive, and with out ore to value. The 70, east of this shaft, produces 1 ton of ore per fathom. The 120, east of O'Shea's engine-shaft, has fallen off in value within the past few days, now yielding 1/2 ton per fathom. The 100, west of Lowndes' shaft, continues unproductive. In the same level east the lode is regular, and opens good tribute ground, worth 1 ton per fathom. The 90, east of Caro's shaft, produces 1 ton per fathom. In Dugo's winze, below the 110, the water has been drained and the sinking resumed on a lode worth 1/2 ton of ore per fathom. The lode in Canada's winze, below the 70, is composed of spar and lead ore, worth of the latter 1/2 ton per fathom. Juan's winze, below the 90, maintains its value—1 1/4 ton per fathom. In Luis's winze, below the 40, the lode is compact and promising, and yields 1/2 ton per fathom.

Los Salidos: The lode in the 160, west of Taylor's engine shaft, is letting out a great deal of water, and is valued at 1 ton per fathom. The lode in the same level east is disturbed and irregular, yielding 1/2 ton per fathom. The 145, east of Taylor's engine shaft, is in good stopping ground, and worth 1 ton per fathom. The 120, east of San Pablo's, has fallen off in value during the last few days, and worth at present 2 tons per fathom. The 110, east of San Miguel's shaft, is poor. Nothing is heard from the 80, west of Palgrave's engine shaft, and the ground is hard. The 50, east of Palgrave's, is not quite so good, now producing 1/2 ton per fathom. Favourable progress is being made in sinking Taylor's engine-sh

finest gold may yet be transmitted. About 3,000,000, has been shipped recently to the United States from this country and from France. The P. and O. steamer *Knave* arrived on the 1st inst. with 178,000, as specified in our last. There is no export demand whatever at present. 322,000, has been withdrawn from, and 224,000, (chiefly French gold) been purchased by the Bank of England since our last. 2000, in coin has been shipped to Singapore, per Mongolia. — *BAR SILVER* has been inactive during the last few days, and to effect sales a reduction of 5/4. per oz. from the price obtained for bars, ex Para, was accepted, the quotation this day being 51 1/4. per oz. standard. The Douro, from the Brazil, has brought 20,000, and the *Neckar*, from New York, 10,000. The Royal Mail steamer *Moselle* took 14,500, chiefly in coin, for the West Indies, and the P. and O. steamer *Mongolia* leaving Southampton this day 79,200, to Bombay and 5000, to Manila.

The MINING SHARE MARKET has been particularly active since our last, and a large business transacted at higher prices in several mines, both for tin, copper, and lead. In some of them a reaction has since taken place, but owing rather to over speculation or bearing operations than to any changes in the mines. Those mostly dealt in have been Carn Brea, Dolcoath, South Frances, Wheal Crebor, Roman Gravel, Great Laxey, Leadhills, West Basset, East Pool, Herodsfoot, West Chiverton, Tankerville, South Crofty, and a few others.

TIN.—As we expected last week, the standard for ore has been further advanced 2/4 per ton, and early in the week tin mines became in great request, and prices rose rapidly, but the rise has scarcely been maintained, and some mines are lower than the price reached, though higher than last week's quotations. Dolcoath advanced to 32 1/2, 35, then dropped to 30, and leave off 31 to 32. Carn Brea advanced to 30, 35, and leave off 30 to 32 1/2. East Pool, 14 to 15. East Lovell, 1 1/2 to 2. South Crofts have advanced from a mere nominal price to 15, 17 1/2. South Condurrows remain steady, at 11 1/2 to 12. South Frances have advanced to 7 1/2, 8 1/2. Tincrofts, 10 to 12; West Basset, 4 1/2 to 5; Wheal Basset, 5 to 5 1/2; Wheal Agar, 3 1/2 to 4; Wheal Grenville, 4 to 4 1/2; Wheal Peavor, 10 1/2 to 11. West Frances, 4 1/2 to 5; this mine, we hear, is improving going west. Wheal Jane, 2 1/2 to 3 1/2. Botallack are in request, at 22 1/2 to 27 1/2. Cook's Kitchen, 1 1/2 to 1 3/4; West Peavor, 3 1/2 to 4.

COPPER.—At the Cornish ticketing on Thursday the standard for ore advanced 2/4, the average price of the ore was 3/11 1/2. Devon Great Consols, 1 1/2 to 2; East Caradon, 5s. to 10s.; Marke Valley, 10s. to 15s. West Tolgus, 2s. to 2s. 6d.; at the meeting in Cornwall the accounts showed a profit on two months working of 50/4. The copper ores sold realised 265/4, and the ores already sold for the next account have brought 281/4. Mellanear, 3 1/2 to 3 3/4; the ore on Thursday (600 tons) realised 197/4. West Seton, 18 to 20; 109 tons have brought 455/4. Wheal Crebor shares have been largely dealt in, and on Tuesday, on receipt of the report, reached 4 1/2 to 5. On Wednesday they were again done at 4 1/2, and they "banged" down to 3 1/2. 4. The report of Friday was one of the best ever received from the mine, and shares opened at 4, and after a large business closed 4 1/2 to 4 3/4. The report states the lead west in the bottom of the winze has been cut into 12 ft.; worth 60/4 per fathom. New south lode east of the 108 cross-cut is worth 60/4 per fathom. This lode is 8 ft. wide, 6 ft. of which goes to pile. The two points are valued at 60/4 per fathom each, and the agent states 35 fms. apart. Bedford United, 5s. to 10s.; the mine looks well, and the returns are nearly meeting costs. South Caradon, 4s. to 5s.; Parys Corporation, 10s. to 12s. 6d.; Morfa Du, 16s. to 18s.

LEAD MINES are fairly active, but not so much doing in them as in tin and copper. Van, 15 to 16; Great Laxey, 16 to 17. Roman Gravel, 8 1/2 to 8 3/4; the sampling is 150 tons of lead ore. Aberllyn, 10 to 12. Pateley Bridge, 3 1/2 to 4; the mine throughout fully maintains its improved appearance, and all points are equal in value to last report. West Pateley, 2 1/2 to 2 3/4; the Craven cross lode in the 56 level continues worth 6 tons of lead ore per fathom. Pandora sold on the 1st 20 tons of lead ore at 8/17s. 6d. per ton, and 20 tons of blende at 3/4. Os. 6d. East Van, 1 1/2 to 1 3/4; Glenroy, 3 1/2 to 4; Herodsfoot, 2 1/2 to 2 3/4. Leadhills have been in demand, and leave off 2 to 2 1/2. West Chiverton, 1 1/2 to 2 1/2; Gwernymynydd, 4 to 4 1/2. Tankerville, 3 to 3 1/2; the particulars of the meeting will be found in another column. The accounts show a loss on the year, owing to the low price of lead, of 1286/4. 6s. 8d. The quantity of ore sold by the mine since its commencement has been 13,450 tons 12 cwt., realising 180,824/4. 19s. The agent, commenting on this, informs us that "seasons come in cycles, history in epochs, which are ever and anon repeated, and the same may be said of the unproductive and productive sections of a mine. Tankerville is therefore, he believes, getting rid of the weight of her late difficulties, and will in good time show in her case, also, history repeats itself." Caron, 2 to 2 1/2; Frongoch, 1 1/2 to 2; Grogwinion, 2 1/2 to 3; Hartington, 1 1/2 to 2; Crosswood, 1 to 1 1/2; Mawston, 1 1/2 to 2; Red Rock, 1 1/2 to 2; West Wye Valley, 1 1/2 to 1 3/4; Wye Valley, 1 1/2 to 1 3/4.

FOREIGN MINES.—Canada Gold, 2 to 2 1/2; Cape Copper 28 to 30; Colorado, 1 1/2 to 1 3/4; Don Pedro del Rey, 10s. to 12s. 6d.; Ruby, 1 1/2 to 2; Eberhardt and Aurora, 2 to 2 1/2; Frontino and Bolivia, 2 1/2 to 2 3/4; New Quebrada, 2 to 2 1/2; Panulcelio, 1 1/2 to 1 3/4; Richmond, 7 1/2 to 8 1/2; St. John del Rey, 260 to 270.

The Market for Mine Shares on the Stock Exchange has continued to improve throughout the week, and is altogether in a more healthy condition. A rise of over 2/4 in the standard for copper, representing 3s. 6d. to 4s. 6d. per ton upon the ore, was paid to the miners both at Swansea on Tuesday and at Redruth yesterday. Tin shows a still greater rise, and there is considered to be a good prospect of permanency of rates now reached. Lead has remained fully as high as last week, when the large advance upon previous prices was noticed. And zinc is from 4/4 to 6/4 per ton better than a month ago, so that there is altogether much to make miners look cheerful. Ore has hitherto been sold by the 21 cwt. ton—that is, the Imperial ton of 20 cwt., with 5 per cent. added for moisture, loss, &c.; and some amusement has been caused among miners by the proposition of "Reform," to abandon this simplicity, and adopt the rather curious weight of 17 cwt. 3 qrs. 12 lbs. as the unit upon which miners should be paid for their ore. For smaller parcels he desires 3 qrs. 12 lbs. to be the unit. In the 56 lbs. weight is usually the only one found near where copper and lead ores are weighed it would cause even "Reform" some inconvenience to weigh his simple unit of 17 cwt. 3 qrs. 12 lbs., or even to state the price which the miners received per 17 cwt. 3 qrs. 12 lbs. at yesterday's ticketing.

Referring to the profits of mining, the Boston (U.S.) Economist remarks that to those who question this fact it may be of interest to learn the amount of dividends paid by the Consolidated Virginia and California Mining Companies, as taken from the books of these companies. The Consolidated Virginia paid ten dividends of \$3 each on the old shares, 34 dividends of \$10 per share, two of \$5 per share, and three of \$250 per share—in all 49 dividends, aggregating \$387,500 on each share, and amounting to a total of \$4,850,000 paid out in dividends. The first dividend was paid May 7, 1874, and the last in June, 1879. The California paid 26 dividends of \$2 each, 4 of \$1 each, and 2 of \$50 each, being 32 dividends in all, amounting to a total of \$30,710, or \$57 per share. The first dividend was paid in May, 1878, and the last in June, 1879. The total amount paid out in dividends by the two companies to date is \$7,230,000.

The approaching final collapse of the Amador Volcano Gold Mining and Canal Company (Compagnie des Mines d'Or et Canaux d'Amador Volcano) was noticed in last week's Journal, and it is gratifying that traffickers in American mines are beginning to comprehend that if they desire to take advantage of the employment of European capital for the development of their mines they really must let honesty have at least a small connection with their negotiations. Messrs. Targan, Henry de Parville, Renevey, Baron de Watteville, and Albert Rabon, may probably be deserving of pity for having been connected as directors with the enterprise, but more will be known upon this point after the meeting of the 7th. It is announced, however, that all subscriptions are to be returned. These directors, therefore, have only to show that they had entered into no arrangement to participate in the unjustifiable profits which it was proposed to extract from the French public. The Credit National gives the gist of an excessively strong article, from the Exchange of San Francisco, published with the heading—The End of the Amador Volcano Swindle. It refers to Colonel Berton, formerly Vice-Consul of France at Sacramento, and whose name is familiar to the readers of the Journal in decidedly impolite terms. It appears that the original owners of the property sold it to the famous "mining blit" for 16,000, which it is added, was not an exorbitant amount, although they did not think the property was ever capable of giving the smallest dividend even on that reduced price. But this head of the self-styled Mining Bureau, the good Consul Berton, succeeded, it appears, by his persistent representations and his opinion so disinterestedly given as a "mining expert," in getting up a French syndicate for putting the affair on the Paris market at an enormous price (the capital of the company was 5,000,000 frs. in 10,000 shares, and the shares issued were offered at 20 per cent. premium). This syndicate advanced the 16,000, that Berton had to pay, and also 2000, for expenses, and then unobtrusively palmed off the gold mine on the French people. The millions were subscribed and paid up, but the truth reaching Paris too quickly, the money was attached, and the syndicate had an independent report made and sent a French agent to join the expert. The first glance at the place satisfied them that "the affair was a swindle," and it seems that it is described at San Francisco as one of the worst mine adventures on the Pacific Coast, whilst very harsh remarks are made about the "Mining Bureau" and its originator.

The mines of Utah are likely ere long to come prominently forward again. It is said that the Emma at Little Cottonwood is now yielding very rich ore, some of the assays of first grade stuff show-

ing over \$900 of silver to the ton, whilst the lower grade pays well for working. Prof. J. S. Newberry, of the Columbia College School of Mines, has been spending his vacation in Utah and Nevada, and has expressed a very favorable opinion upon the value of the mineral resources of Parley's Park, Little Cottonwood and Bingham Canyon districts, the only ones yet noticed by the Tribune interviewer. The professor, with regard to Bingham canyon, says that the deposits are valuable, but, on the whole, are continuous and will be permanent. The Old Telegraph, the Stewart, the Spanish, and the Jordan well illustrate the general character of the veins of the district. Prof. Newberry's opinion will be more fully referred to next week. The Old Telegraph Silver Lead Mine was sold at an absurdly high price (15,000,000 fr.) to a French company as Les Mines de Bingham, and it is said that they are employing brigades of workmen as large as the Prussian armies which invaded France, the hope being expressed that they are not working it to death. Holden, the vendor, has sold his house and horses to Mr. Medhurst, the new manager, so as to be ready to say good-bye to the scene of his victories. It is added that "the people there think that there are large reserves of ore in sight."

St. John del Rey, 265 to 275; the latest telegram from the mines at Morro Velho, dated Rio de Janeiro, Aug. 29, states that the produce for the second division (nine days) of August was 9750 oits., of the value of 377/4, the ley of the ore being 5/8 oits. per ton. At Cuibah they stamped 200 tons in 16 days, the ley of the ore being 2 1/2 oits. per ton. Don Pedro North del Rey, 1/2 to 3/4; the manager (August 4) writes: produce for July amounts to 888 oits., being some increase on the last, which he is in hopes of continuing. The present increase is only attributable to the discovery of a lode by exploring a rise at Bryant's, which looks very promising for extending, as well as for producing a large quantity of ore, the quality which is expected to improve as soon as steps are opened on it. Then they will be able to prevent the country from the hanging wall mixing with the ore.

Richmond, 7 1/2 to 8 1/2; the usual telegram from the mines at Eureka, Nevada, states that the week's run with one furnace was \$27,000, from 412 tons of ore. During the week the refinery produced \$25,000 worth of doré bars. The mine is steadily improving. The manager (August 13) reports that the mine has been carried on with the usual regularity. The 200 cross-cut is hard, but very favourable for striking ore. The 400 south-west cross cut does not look favourable, and has been suspended. The 800 west drift is very favourable. They have lost the vein in the 600 west from south fissure, but are exploring as fast as possible to re-find it in depth. All the machinery is in good working order.

Ruby, 1 1/2 to 2; the chairman of the company is expected home in a week, and full particulars are then to be communicated. The carrying out of Capt. Rickard's recommendations will have the immediate attention of the board, the main object of which is to drive a cross-cut out from the Dunderberg to intersect the "Home Ticket," which is believed to be the hanging wall of the Great Dunderberg lode. The lode will be cut about 100 fms. below where Capt. Rickard reports that there is a great mass of ore, and it is the opinion of the experts who are conversant with this mine that the richest deposits will be found on this hanging wall, as has been proved in the working of the Richmond and Eureka.

Hydraulic companies' shares are still extremely quiet, probably owing to the vastly improving prospects of home mines. As to Birdseye Creek, the manager writes that he has ordered powder to make up 920 kegs, which he will explode in a drift now ready as soon as received. He thinks he will be able to get water to clean in this blast, which is in good ground, and as they have a very large amount of bottom gone over this season he feels very sanguine as to final results at the close of this water season. At the Oregon the clean-up will, the manager writes, more than pay them out of debt. Placeville, 2 1/2 to 2 3/4; a telegram just received from the Chairman states that they have cut the vein rich in the 500 ft. level. The Mountain Democrat (Aug. 5) says—It is expected that Mr. J. I. Courtney, of London, President of the Pacerville Gold Quartz Mining Company, will arrive in this city to-day on a visit of inspection to the mining property above named. Beyond a peradventure he will be greatly pleased with the condition and prospects of the mine. A large ore-body has been developed, and within the past few days ore has been taken out which is exceedingly rich. Numerous samples have been taken out that have yielded as high as \$20 from a chunk no larger than a man's fist. We have heretofore noted this company's purchase of the fine mill and hoisting works of the St. Lawrence Company. The mine has been opened in a systematic manner, and with good judgment. A prosperous future is well assured to it.

In Lead Mine shares there has been scarcely so much doing as might have been expected from the improved prices being paid for ore, but what transactions have been taken place have been at fully last week's prices, holders being fully satisfied that present prices will be maintained by the smelters. As a consequence of the improvement it is stated that during the past month the Tankerville profits will be 300/4; the shares are quoted 3 1/2 to 3 3/4, and it is said there are several buyers on the market of these shares, owing no doubt to the satisfactory nature of the meeting of shareholders on Tuesday last (the particulars of which are given in another column), and the improving prospects in the development of the various lodes, from which early discoveries of ore are expected. Gwernymynydd, 4 to 4 1/2; the Froh Pwng has been successfully drained to the bottom, which, in the face of the extensive floods which have prevailed for weeks past, is spoken of as a triumph of engineering skill. The body of water has been enormous—12,000 tons per day—and raised by an 85-in. cylinder engine through 24-in. pit-work. An important improvement is reported to have taken place in No. 1 cross-cut in the upper lead course, which is now 4 ft. high, some of the lumps being 1 lb. to 2 lbs. in weight, indicating an early discovery.

Grogwinion, 2 1/2 to 3; no fresh news of importance this week. Frongoch, 1 1/2 to 2; the progress made continues to be very satisfactory; 130 tons of lead and 100 tons of blende are to be sampled very shortly. Caron, 2 to 2 1/2; the mine is looking well. Wye Valley, 1 1/2 to 1 3/4; another parcel of lead is nearly ready for market. West Wye Valley, 1 1/2 to 1 3/4; all going on well. Red Rock, 1 1/2 to 2; this mine has much improved lately, and prospects are excellent. Mawston, 1 1/2 to 2; Crosswood, 1 to 1 1/2; Hartington, 1 1/2 to 2.

Mineral Corporation, 11 1/2 to 12 1/2; an interesting article on British lead mines in published in the Paris Journal des Mines by Mr. A. F. Nogues, the Chief of the Union des Ingenieurs, who has been analysing the reports of some of the British lead mines quoted in our Mining Journal, and has apparently visited the Llanrwst district. He shows that 37 British lead mines, with a subscribed capital of 1,038,983, 8s. 4d., gave dividends in 1878 amounting to 116,441, 7s. 9d., or more than 10 per cent. all round, and very truly remarks that such results leave no doubt that the lead mining industry is a highly remunerative one. He then goes on to say that the Mineral Corporation of Great Britain, which owns mines traversed by the celebrated lodes of Hafna, High Hafna, Bryn Canadon, &c., offers a remarkable example of mining prosperity. The working of these lead mines, commenced scarcely eighteen months ago, has, in spite of the heavy expenses for machinery and operations inseparable from new undertakings, produced enough mineral to cover all expenses. In his opinion the lead mines of the Mineral Corporation of Great Britain will now enter upon a period of productiveness and profit which will place it on a par with the best English lead mines. The manager reports that there is nothing of special importance to report as to underground workings. At Great D'Esby the stack for the vertical boiler is finished, also the building for engine and compressor, and the latter are now fixed in their places. No time shall be lost in getting the fittings connected, so as to make a start with the boring machines. Mr. Croft is here, and has carefully and thoroughly inspected the properties underground and at surface, and appears to be well pleased with the progress made since his last visit.

Pateley Bridge, 3 1/2 to 4; the mine throughout fully maintains its improved appearance, and all points are equal in value to my last report. We shall start driving a 40 fm. level both east and west upon Rake vein in the bottom of the engine-shaft some day next week.

Leadhills, 2 1/2 to 2 3/4, and have been in good demand all the week, owing to the rise in price of lead, and improvements of some importance in the mines and increased monthly returns of ore therefrom.

Subjoined are the closing quotations:—

Carn Brea, 31 to 33; Devon Great Consols, 2 to 2 1/2; Dolcoath, 30 to 32; East Caradon, 1/2 to 3/4; East Van, 3/4 to 1 1/2; Gwernymynydd, 4 to 4 1/2; Glenroy, 3 1/2 to 4; Glyn, 3/4 to 1 1/2; Great Laxey, 16 to 17; Leadhills, 1 1/2 to 2 1/2; Marke Valley, 3/4 to 1 1/2; Pateley Bridge, 3 1/2 to 4; Penarth, 1s. to 2s.; Roman Gravel, 8s. to 8 1/2; Tankerville, 2 1/2 to 3 1/2; Tincrofts, 10 to 11; Van, 15 to 16; West Chiverton, 2 to 2 1/2; Wheal Crebor, 4 1/2 to 4 3/4; Wheal Grenville, 4 to 4 1/2; Almada and Tinto, 1/2 to 3/4; Birdseye, 3/4 to 1 1/2; Blue Tent, 1 1/2 to 2 1/2; Canada Gold, 2 to 2 1/2; Cape Copper, 28 to 30; Chontales, 3-16 to 5-16; Colorado United, 1 1/2 to 1 3/4; Don Pedro, 11s. to 13s.; Eberhardt and Aurora, 1 1/2 to 2 1/2; Eberhardt, 1/2 to 3/4; Flagstaff, 1/2 to 3/4; Frontino and Bolivia, 1 1/2 to 2 1/2; Huilafta, 1 1/2 to 2; Javalli, 1/2 to 3/4; Kapanga, 1/2 to 3/4; New Quebrada, 2 1/2 to 3 1/2; Placeville, 2 1/2 to 3 1/2; Port Phillip, 8s. to 10s.; Richmond Consolidated, 7 1/2 to 8 1/2; United Mexican, 2 to 2 1/2.

At Redruth Ticketing, on Thursday, 1230 tons of copper ore were sold, realising 4361/4. 11s. 6d. The particulars of the sale were—Average standard, 84/4. 3s.; average produce, 7 1/2; average price per ton, 3/11s.; quantity of fine copper, 92 tons 1 cwt. The following are the particulars:—

Date.	Tons.	Standard.	Produce.	Per ton.	Per unit.	Ore copper.
July 31 1145	80	3	0	7 1/2	23	9
Aug. 21 2084	86	12	0	6 1/2	21	7
Sept. 4 1293	84	3	0	7 1/2	31	0

Compared with the last sale, the advance has been in the standard 2/4 5s., and in the price per ton of ore about 3s. 6d.

At the Swansea Ticketing, on Tuesday, 2179 tons of copper ore were sold, realising 9546/4. 16s. 6d. The particulars of the sale were—Average standard for 9 per cent. produce, 76/4. 18s. 3d.; average produce, 8 1/2; average price per ton, 4/17s. 7d.; quantity of fine copper, 185 tons 11 1/2 cwt. The following are the particulars of the two last sales:—

Date.	Tons.	Standard.	Produce.	Per ton.	Per unit.	Ore copper.	
Aug. 12	1745	474	9	7	10s. 3d.	251	4
Sept. 2	2179	78	18	3	8 1/2	10	3

Compared with the last sale, the advance has been in the standard 2/4 10s., and in the price per ton of ore about 4s. There will be no sale on Sept. 16.

At the Lawes' Chemical Manure Company annual meeting, on Monday, the report showed that the sales for the year ended June 30 amounted to 265,092, and the stock on hand at that date was 51,537. Including the balance brought forward the profit was 36,231/4, 10,000, had been placed to the reserve, to

reduce the plant and goodwill account, and from the balance the directors recommended a dividend of 5 per cent. upon the ordinary stock, which with 7 per cent. payable on the preference stock absorbs 16,732/4, leaving 9501 to be carried forward.

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LEAD ORES.			
Date.	Mines.	Tons.	Price per ton.
Aug. 22—Minera	50	£ 9 3 0
— ditto	50	9 3 0
— ditto	50	9 5 0
— ditto	50	9 4 0
— ditto	8	9 2 0
Sept. 1—Pandora	20	17 6 0
2—Foxdale	103	13 6 0
3—Central Foxdale	60	10 15 0

BLENDE.			
Date.	Mines.	Tons.	Price per ton.
Aug. 22—Minera	75	£ 4 5 6
— ditto	35	4 5 6
— ditto	50	4 6 8
— ditto	54	4 10 6
— ditto	28	4 2 6
Sept. 1—Pandora	20	3 0 6

TIN BARILLA SOLD IN LIVERPOOL.

Date.	Tons.	Price per ton.	Purchasers.
Sept. 3	£32 15 0	Daub and Co.
.....	30 15 0	T. Bolitho and Sons.

Notices to Correspondents.

ABEGG'S DRILL.—We are asked by an engineer to procure particulars of the Abegg drill, mentioned by your correspondent "Tributer" in last week's Journal, as having been described "many years ago" in the Journal. Would he kindly inform us in your next number about what date the description appeared? We have a file of the Journal for reference.—COATES and CO., Old Broad Street.

CARBONATE OF IRON.—Will any reader kindly favour me, through the Journal, with information on Carbonate of Iron—where it is being used, and about the price per ton at the works? I am in a position to supply a number of tons per month providing the price is much as to admit of a small profit after paying expenses.—WHITE IRON-STONE.

COMBUSTION OF FUEL.—"K. J. C." (Peckham).—There is no doubt plenty of room for inventors, as it has been stated that the fuel consumed in Great Britain is only made to produce about one-sixth of the engine power which theoretically it should produce, so that to get twice the usual quantity of steam for each pound of fuel burnt is not impracticable; it is, however, not the first time a similar claim has been made. An experienced patent agent would be the best person to consult as to the novelty of the invention.

BLLENDE ORES.—"H. J." (Llanrwst).—The blende ores at present prices certainly ought to be as remunerative as lead. The rise in zinc during the past month has been about 4/10s. per ton, which should enable buyers of blende to give such an increase of price to the miners as will lead to the active working of every blende deposit in the district.

Received.—"J. D." (Calcutta) Next week.—F. M. F. Cazin (Bernalillo, New Mexico) Next week.—"W. and Co." (Syracuse).—"M. W."—"A. S. V." (Pensacola). See Mr. Ashmead's letter in last week's Journal—"Shareholder" (Bognor).—We think not—"R. O." (Plymouth).—"P. V. S." (Dunfermline).—We have no desire to check correspondence, the contrary feeling is too frequently shown; but to continue to attribute improper motives after an official explanation of its incorrectness is hardly fair—"Shareholder" (Wheat Basset).—"Constant Reader" (Richmond).—"M. W. E."—"Shareholder" (Wheat Basset) had better send his letter to the Secretary.

* A pressure on our space compels us to postpone several matters intended for this week's Journal, among them being the Report from our North Wales Correspondent, which contains some interesting statistical information—"M. E." on the Fluctuations of Atmospheric Pressure, as affecting the issue of Fire-Damp in Coal Mines—On Ancient Cornwall, from "Tre, Pol, and Pen"—Capt. Knapp on Literary Amenities—the Production and Price of Coal—the Colombian Hydraulic Mining Company—the Ventilation of Collieries—the Floating and Honourable Management of Public Companies.

THE MINING JOURNAL.

Railway and Commercial Gazette.

LONDON, SEPTEMBER 6, 1879.

MINERALS OF NORTH WALES.

In connection with the meeting of the British Association held at Sheffield, the Mineralogical Society of Great Britain and Ireland held their fourth gathering at the same time. Amongst the papers presented was one by Mr. T. A. READWIN, F.G.S., entitled "Notes on Minerals of North Wales," which contains a good deal of interesting and really valuable matter, more especially as regards the precious metals found in some localities. Taking the Mawddach Valley, Mr. READWIN says the late paleontologist, Mr. SALTER, characterised the portion of the lovely valley of Mawddach, at and near the Falls of the Cain and Mawddach rivers as "a perfect geological puzzle." Certain it is that touching Tyddingwladis the survey maps are greatly at fault, for the rocks thereabouts most if not all of them are of pre-Cambrian age. Dr. HICKS appears to have hit upon the truth approximately in what he calls Dimetian at St. David's, as applied to the lower beds of the district. After more than a year's investigation of these puzzling rocks and their associated minerals, chiefly with reference to the modes of occurrence of the precious metals, Mr. READWIN proceeds to say, I must frankly admit that the locality geologically to my comprehension remains pretty much as SALTER describes it, "a puzzle." But Dr. HICKS will probably soon solve the problem, if he has not done so already. Leaving the exact order of superposition of the rocks in the hands of the geologist, I will briefly state what the hand specimens I have collected show. There are black micaceous and talcose schists, black and green shales, hard, dark, grey felspathic ash, and cindery looking unclavable (for the most part) slates. Lower Silurian of the survey, black slates (upper Cambrian or Lingula flags of the survey), felspathic and trappan grits, hard worn sandstone, rough schists, shales, slates (lower Cambrian), portions of felspathic lava beds, &c. There are also the usual intrusive greenstones of the survey of different shades of colour, often coarsely grained, prominently quartzite and hornblende; also diabase and diorite, and the magnificent uraltite porphyry of Dr. FORBES. The minerals include compact and crystallised barytes, calcite, orthoclase, chlorite, black hornblende, white scaly mica, white, yellow, ferruginous, calciferous, auriferous and pyritous quartz, with the chert or ironstone variety, which is often found powdered with extremely fine gold, all of which is so light that it will float on water. Talc is also occasionally met with and their ores, as follows:—Gold found *in situ* in the metallic state of a very pale yellow colour, but as yet it has not been found in anything like geometric forms of crystallisation, it being generally disseminated in whitish crystalline quartz in a state of division so minute as to be scarcely discernible by the aid of a powerful lens. Occasionally the gold is found in something like what Sir R. MURCHISON characterised as "crystallised twigs," and answers to PLINY's "electrum," containing from 10 to 15 per cent. or more of combined silver. Much has been said of derivative forms of gold, but from a long series of observations I cannot be persuaded to believe in derivative forms touching systematic crystallisation, but rather that gold in the locality alluded to is frequently contained in quartz in a non-metallic state, and that in process of time, be it long or short, particles of gold in ever-varying shapes increase palpably in size and weight, even in and upon quartz, apparently wholly destitute of the ordinarily associated metallic sulphides. Recently reported analyses also favour this view that gold exists in the district to which allusion is made before in a state of sulphide, and probably in some other state. The electrum is frequently found in quartz more or less surrounded with galena, blende, iron pyrites, copper pyrites, and mispickel or marcassite, but chiefly with galena and blende, and a ponsile looking mineral. Many of the specimens of galena in quartz had been treated with hot acids, and in so doing the sulphide has been got rid of, and so obtaining the electrum enclosed within it, growing as it were out of the quartz, which could then sometimes be easily detached. There is, therefore, some reason for believing that the galena in such cases is the more recent mineral aggregate. The electrum has been found in argentiferous galena altogether unassociated with quartz or other metalloids, whilst bits of gold have been found in the sand and silt of the River Mawddach several grains in weight. The stream gold is worth fully 5s. an ounce more than the electrum, which is found disseminated throughout the lode stuff generally. I gave my friend, Dr. FORBES, F.R.S., a goodly sample of the stream gold, and with respect to it he wrote—"The portion received contains the native gold in the form of small, flattened, elongated spangles, in form from the size of a pin's head down to almost dust, and of a rich yellow colour. It was accompanied by abundance of fine black sand, supposed to be magnetic oxide of iron, from its being strongly attracted by the magnet, but which on analysis turned out to be Titanogereite. It also contained small particles of quartz slate rock, mica, and small cubes of iron pyrites and galena. The specific gravity of the gold carefully separated from any other admixture was found to be 15.79 at 60° Fahr., quantity employed 22.75 grs.: 20.16 grs. afforded 17.71 grs. of metallic gold, 3.89 grs. chloride of silver, 0.09 grs. of insoluble quartz, and 0.10 grs. sesquioxide of iron. The results when calculated give:—

Gold	17.71	84.89
Silver	2.92	13.99
Iron	0.07	0.24
Quartz	0.09	0.43
Ca. and loss	0.07	0.35
	20.86	100.00

Several of the largest spangles of gold appeared of a peculiar rich colour, owing to their being coated with, as it were, a varnish, or

thin film of sesquioxide of iron, which persistently adhered to their surface, and probably was the source of a part, if not of all, the iron found by analysis. This coating, no doubt, was the cause of the gold appearing to the eye considerably richer than it actually turned out to be on assay." "I have," says Mr. READWIN, "very recently washed out about half an ounce of similar gold, but chiefly in much larger pieces from the same locality. It is associated with bits of galena, blende, titanoferrite quartz, mercurite, and fragments of rock debris. The iron is removable by magnet, but particles of gold will also adhere with it. Some of the spangled gold is tarnished, as FORBES describes it, but it is generally tarnished with titanogereite, and the tarnish is instantly removed by sodium or potassium amalgam, and will yield to the ordinary process of amalgamation without taking into account the greater richness of this stream gold, compared with the electrum of the lode stuff." It is, therefore, more than probable that it did not originate at Tyddingwladis at all. It was more likely brought down by the Mawddach floods from the Gwynfynydd or Cwmheisan mountains, or from still nearer the source of the Cain and Mawddach. In my paper on "Mineral Growth," at ordinary temperature I have shown that at times, under apparently ordinary conditions, gold, silver, copper, and iron suddenly oxide from the surface of the minerals, especially of quartz as to gold and calcite, and argentite as to silver, and this extension for convenience of expression I have termed "Mineral Growth." The expression does not happen to be generally acceptable to the mineralogical mind, but the metals grow in the sense I mean it for all that. In that paper I referred to a lump of white quartz weighing about 3 cwt. which once occupied a place in a fern corner of my garden. The stone in December, 1877, shot out a crystallised twig of electrum gold more than 1-16th of an inch long in the course of ten days—probably it grew in less time than that. This and other growths fell or grew off somewhere between the beginning and ending of the observed ten days. In May, 1878, another sprig shot up from the very same spot, and remains thereon possibly to the present time (I lent the stone to the Liverpool Museum, and have not seen it since). Similar detachments may account for most of the stream gold at Mawddach, and probably elsewhere. Why the stream gold of that district should contain less silver than the electrum *in situ* I cannot as yet determine, but the fact remains so. Sections of some of the water-worn gold show that cavities in them are very prevalent. These, as FORBES suggests, are air cavities, and will account primarily for the comparatively low specific gravity of the stream gold as a rule.

The electrum *in situ* in the locality specially noticed is most unequally distributed. It is generally thought that native or free gold never occurs uncombined with silver. Probably this is so. However, gold frequently contains Fe, Cu, Hy, Pd, Pt, or Ir, as well, or several of them. The Mawddach stream gold contains traces of Pt, and Cu, as well as about 14 per cent. of silver. In some of the pyritous minerals found in the same neighbourhood I am certain that the gold does not always exist in the metallic state, but that it is frequently combined with sulphur or arsenic, or more or less with both. At present I have detected no tellurides, such as tetradymite, commonly found in the Clogau Mountain, five miles distant. I have several times found spangles of gold at the roots of ferns growing near the western side of the Mawddach river, and for more than two miles along the eastern side a series of shallow pits gave me similar gold at every sinking. In one place I got several ounces of stream gold from the margin dirt. In the ordinary operation of washing this dirt the most experienced hand fails to concentrate the whole of the gold contained in it. There are always mineral mixtures of high specific gravity, such as galena, magnetite, &c., and the lighter gold alluded to is always more or less persistent in floating off, so that gold washing *per se* is necessarily attended with great loss of gold. The result of two analyses of the Clogau gold by FORBES are as follows:—

Gold	\$30.69	=	90.16	4.86	=	89.83
Silver	3.15	=	9.26	0.50	=	9.24
Copper and iron	traces	=	traces	Fe trace	=	traces
Quartz	0.11	=	0.32	0.04	=	0.74
Loss	0.09	=	0.21	0.26	=	0.19

Total \$34.04 = 100.00 5.41 = 100.00

FORBES further writes—"The metals Au, and Ag, are known to alloy with one another in all proportions when fused, and being both monometric in crystallisation are doubtless isometric in their replacements. It is interesting, however, to observe that the above analysis closely agrees with the formula $au_{10}^{100} ag_{10}^{100}$, while supposing the equivalent of Au, and Ag, to be respectively 196 and 108, would on calculation require a percentage composition of gold, 90.88; silver, 9.12=100. Gold washing in the Mawddach can never be profitable except to old hands at it on their own account solely, who can conscientiously keep all they may happen to get. My own trials at it invariably cost me about 1s. per grain! although the Rhine sand is considered worth washing when containing only 0.00000012 per cent. of gold! The following minerals are also found in the Mawddach district:—Native silver, copper pyrites, iron pyrites, macassite, rhodochroite, polytellurite, tetahedrite, blende, stibnite, senarmontite, adionite, earthy malachite, tetanogereite, &c."

In concluding this notice we may say that the Press representatives were greatly indebted to the secretary of the society for his marked courtesy and kindness to them.

IRON IN THE UNITED STATES.

The railroad interest of the United States is beginning to exhibit something of the feverishness which distinguished it in 1871, 1872, and 1873. On all sides the work of construction has been resumed, and it is estimated that the American consumption of rails in 1879 will foot up to 1,100,000 tons. The Americans not being able exactly to produce this quantity of rails at home in any one year are beginning to cast about for foreign supplies; and English rails being cheap, they have not unreasonably made purchases in England. Wonderful as it may appear after the mournful experience of the last five years, we seem likely to send a respectable quantity of rails to the United States this year, although it is not at all equally clear that we shall make a respectable profit upon them. But the question arises whether the Americans are not, as usual, overdoing it; and whether after another year or two of wild speculation we shall not witness another collapse similar to that which occurred in the American railroad interest in 1873.

We will not venture to affirm that such a catastrophe will not take place, but we think that at present the animation prevailing in American railroads has much more genuine strength about it than could be observed in 1872 or 1873. The reduction which has been effected in the rate of interest in the great monetary centres is naturally calculated to stimulate sound and legitimate enterprise. Then, vast sums have been poured into the United States during the last three years for corn and cotton; and capital as well as population has accumulated in the Republic. If the Americans are taking in anybody at present they are taking in themselves, since they are not appealing to Europe for capital as they did six or seven years since. Upon the whole, we are inclined to think that what we are now witnessing in the United States is a development of legitimate enterprise. Whether that legitimate enterprise will degenerate during the next two years into reckless speculation we will not venture to predict, but having regard to the past commercial history of the Americans, it is very possible that some such result as this may ensue.

The great tangible fact which stands out in connection with recent events in the United States is this—the revival of activity in the American iron trade has imparted a little tone and strength to the iron trade of Great Britain. Our metallurgical industry was sorely depressed before this slight change for the better took place; and, therefore, we ought to be grateful for it. But still although we ought to be thankful for small mercies—especially in times like these—we ought not to magnify these small mercies into great ones. The contracts for railway iron which have been thus far secured on American account may save our ironmasters from the misfortune of working at a loss, but we have yet to see that they secure them a profit. We must wait for the experience of at least twelve months

before we shall be able to assert, one way or the other, whether our iron trade has really been brought into a much better position. At any rate, it seems clear enough that any attempt to advance the price of rails on this side of the Atlantic would be attended with some risk. The Americans have come to us for rails because our present rail quotations are so low that it pays to import English rails into the United States, notwithstanding the enormous duties imposed by Congress with the professed object of keeping them out. But any rise in the price of English rails must be slow and gradual if we are to retain the least footing in American markets, since such a footing is even now secured with difficulty.

IRON AND STEEL INSTITUTE.

The first programme of the meeting of the Iron and Steel Institute, to be held at Liverpool on Sept. 24, 25, and 26, has just been issued to the members, and promises a highly successful meeting, and one, moreover, that is likely, from a scientific point of view, to command considerable attention. Among a list of over a dozen papers to be read dealing with almost every aspect of the now paramount subject of the manufactured properties and uses of steel, the papers that will probably attract the greatest amount of interest are those by M. Pourcel, of Terre Noire, on the Dephosphorisation of Iron and Steel, and on the Neutralisation of Phosphorus in Steel and Steel-like Metals, by Mr. Richard Brown, of Ayr. It is probable that these papers will lead to a discussion that will bring out much valuable information concerning the progress that has been made since the London meeting of the Institute in the direction of adapting the coarse and impure ore of Cleveland and other districts for the manufacture of steel. A paper on the Geology of the Liverpool District is promised by Mr. Greener, of the Pemberton Collieries, and another on the Progress of Iron and Steel, as constructive materials, by Mr. James Picton, who is so well known in connection with the Picton Reading Room, in Liverpool. Mr. Charles Wood, of Middlesborough, is down for a paper dealing with a novel and interesting subject of the "Application of Toughened Glass to Permanent Ways;" and the same gentleman will discourse on the results of the substitution of wrought-iron for wooden sleepers on the North-Eastern Railway. Professor Akerman, of the Royal School of Mines, Stockholm, promises a paper on the hardening of steel; and Mr. Alfred Davis, of Westminster, will submit a paper on the consolidation of fluid steel by a process which has been adopted in America for getting rid of blow-holes and air-cells in steel ingots.

Mr. Ratcliffe, of the Mersey Forge (the local honorary secretary for the meeting), will also read a paper on the manufacture of large forgings, and the materials suitable for the same, a subject which has a very important bearing upon the safety of vessels, whether used for ordinary mercantile or Government purposes. Among papers that belong more especially to the domain of pure science one will be read by Mr. Thos. Wrightson, of Stockton, "On Some Physical Changes occurring in Iron at High Temperatures;" and another by Mr. John Pattinson, of Newcastle, "On a New Volumetric Method of Determining Manganese;" while Mr. S. R. Smyth, of Manchester, promises a paper on the new process now being developed by him in that city for the refining of iron. A local committee has for some time been at work in Liverpool with the Mayor of that town as President, and Mr. Horsfall as vice-President making the arrangements necessary to give the Institute a suitable reception. That committee has arranged that the best vessels of the Cunard, Inman, and White Star Lines shall be open to the inspection of the members of the Institute; while the shipbuilding, engineering, and chemical works in Liverpool and the district are also to be thrown open to the visitors.

Excursions have been organised to various establishments of interest outside Liverpool, including the well-known collieries at Pemberton the works of the Wigan Coal and Iron Company, the Warrington Wireworks, and the Crews Locomotive Works of the London and North-Western Railway Company. Neither mayoral nor private hospitality is likely to be absent, and the members of the Institute themselves will have their annual dinner in St. George's Hall on the evening of the 25th. The Institute has received a very cordial invitation, signed by all the leading iron and steel manufacturers in Westphalia, to hold its next year's autumn meeting at Dusseldorf, on the Rhine.

WASHING FURNACE SMOKE.

It was a favourite observation of the late Charles Wye Williams that although he was himself a patentee of smoke preventing apparatus he was convinced that there was nothing so cheap or so effective as his Dublin Steam Packet system—that of giving the stoker a shilling a week extra if he made no smoke, and fining him a shilling if he permitted smoke; and it is a fact well known to all who have studied the question of the combustion of fuel that there is practically no advantage beyond avoiding a little dirt in doing anything to decolourise smoke after it has once been made. The annoyance resulting from the densest black cloud of chimney smoke is unworthy of consideration as compared with the loss which results to the manufacturer who produces it, and such projects as the smoke washing apparatus now used at Mr. Goodfellow's engineering works at Hyde, near Manchester, and to which the Manchester Sanitary Association awarded their certificate of merit, are worse than useless, because they merely mask the evil without remedying it. They remove the encouragement to prevent smoke and to economise fuel by creating the erroneous notion that no smoke is being made.

The apparatus, it is true, has been for some years in successful operation at the celebrated W. B. (Mr. Beaumont's) leadworks in Northumberland, but the fact of its having been successful there demonstrates its inapplicability, commercially speaking, as a smoke preventer. At the W.B. works the Johnson and Hobbs apparatus (the application of the principle is so old that probably no living patentee will deny them the credit of invention) is used for throwing down lead fumes, and the deposit even at the present low price of lead is worth 5s. per ton, while, from the very object of lead smelting, it matters little whether the last portions of the lead separated from the ore are obtained as fume dust or otherwise. But what is applicable to the collection of lead fumes may be absurd for washing furnace smoke. At the W.B. works they have a flue about 9 miles long to collect similar lead fumes, but surely even Mr. Johnson would not propose a 9-mile chimney stack as a smoke preventer, yet Messrs. Johnson and Hobbs congratulate themselves upon being able with a machine worked with two Lancashire boilers, 30 ft. long and 7 ft. diameter, "to wash the smoke from four boilers of the same kind and dimensions, burning when in full work about 18 tons of coal per week per boiler." The fact is that the principle is wrong, and has many years since been proved to be so, and this is the reason it has not before come into general use.

But this is not all. The experiments made at Hyde prove something very different to what the inventors would have the visitors believe. The dipping of a cambric handkerchief in the smoke on the intake and outlet side of the apparatus may be amusing to local sanitary authorities, but it proves only one thing, that the fuel is being burned, or partially burned, in a most unsuitable furnace, or that the stoking is bad. It is an ascertained fact that with a furnace fairly suited to the general character of the fuel to be burned (that is to say anthracite must not be burned in a bituminous coal furnace, and *vice versa*) smoke may be prevented by a very moderate amount of care on the part of the stoker, all that he has to do being to push back the incandescent fuel each time of firing, and to place the fresh fuel well in the front. He will then have no smoke darker than pale grey, and none at all visible for more than 20 seconds after firing; and he will, moreover, generate a given quantity of steam with 10 to 15 per cent. less fuel.

It must be remembered, moreover, that every grain of black smoke which passes over the furnaces represents an appreciable loss of the heating power naturally contained in the fuel, and that the Johnson and Hobbs apparatus draws over a largely increased quantity of black smoke for no other purpose than to collect the wasted carbon in their tank, whilst the deposited carbon, unlike

the deposited lead fumes, is practically of no commercial value. The prevention of smoke is beyond doubt desirable, but it must be effected by securing more nearly perfect combustion rather than by attempting to collect and deposit the smoke after it has been produced.

THE BLANTYRE COLLIERY EXPLOSION.—An inquiry ordered by the Right Hon. R. A. Cross, Home Secretary, into the causes of the explosion at Blantyre Colliery on July 2 last, which resulted in the death of 28 men and considerable damage to the pit, was opened on Thursday in the Court-house, Hamilton, before Mr. Joseph Dickinson, one of Her Majesty's Inspectors of Mines. Mr. Dickinson read an abstract of the evidence of 64 witnesses, who had been examined by the Procurator Fiscal. The general tenor of the testimony was that the colliery was well ventilated; that very little fire was ever seen in it; that the men worked with the Davy and Clanny lamps; that naked lights were prohibited; and that some of the men who were killed had been in the habit of tampering with the lamps and also smoking in the mine. Mr. Dickinson said that Messrs. Moore and Alexander, Her Majesty's Inspector of Mines, were of opinion that the explosion was an explosion of firedamp; that owing to some abnormal condition there had been at the time of the explosion an accumulation of firedamp of comparatively small extent, and that the explosion originated at the upper part of the Longwall working; that the gas was not fired at a shot; that up to the time of the explosion five shots had been fired in No. 1, and that two of them were, they believed, near where the gas may have existed; and that some of these shots may have had the effect of displacing the gas and bringing it into contact with the open light which there is too much reason to suppose existed at the point stated. Mr. Watson, manager, stated, in reply to Mr. Dickinson, that new regulations had been framed for the management of the pit. These were more explicit in preventing matches being taken into the pit, or the opening of lamps, than those formerly in force. Mr. Dickinson asked if any one present wished to make any statement in addition to what he had read, and, no one appearing, he declared the inquiry closed.

IRON AND HARDWARE EXPORTS.—The Wolverhampton Chamber of Commerce has just issued a valuable volume of tables showing the various European and United States Tariffs, together with the appropriate percentage of duties upon the present value of the articles specified, also tables showing the total value of British exports to various foreign countries from 1840 to 1878, and tables showing the quantities and values of iron and principal hardware goods exported from Great Britain to various foreign countries, and imported therefrom into Great Britain from 1869 to 1878. The percentage which the duty payable upon the British manufactures pay upon reaching the foreign country is in some cases wonderfully large as compared with the present value of the goods in this country, but it would perhaps have been fairer to have taken this percentage on the prices ruling at the port of entry to the country importing, as it could then have been more readily seen where merchandise could be sent with the greatest advantage to the shipper. Thus the duty on metallic pens entering the United States is 5d. per gross, and 25 per cent. *ad valorem*, which is from 87 to 275 per cent. on present value, but it is obvious that if pens saleable here at 1s. per gross be charged 2s. per gross in the United States there would still be a margin of 12½ per cent. to provide for expenses and profits beyond those obtainable by selling in this country. The tables are of great value, and will be widely appreciated.

THE LEAD MARKET IN THE UNITED STATES.—By last advices sales in New York had been made at \$4.05, and buyers readily took all that was offered at that price. But the bulk of the stock was held at \$4.10, which at going rates of exchange is equal to 19½ per cent. August is the duller month of the whole year in New York. Holders consequently look for a considerable advance when business opens in September. The receipts of lead in New York from Aug. 1 to Jan. 1, 1880, are estimated at 8500 tons. The amount on hand on Aug. 1 was 6000 tons, making a total supply for the closing five months of the year of 14,500 tons. It is estimated that the requirements of trade will fully absorb this entire amount, and leave very little, if any, in first hands on Jan. 1, 1880. There is so much excitement in mining gold and silver in the United States that lead has been quite neglected, except where it is associated with silver. As silver is found largely where there is no lead in combination, lead in such cases is used as a flux. The output of lead is falling considerably below the actual consumption, and the price is steadily advancing, and the market is supported by a firm undertone. This state of things in the United States will again give us the markets of Mexico, Central and South America, the West Indies and Canada, beside China and Japan. Unless the United States can increase their output of lead they must import again, as their entire production this year will not reach 70,000 tons, while they estimate their requirements at 100,000 tons. It is estimated that the output of gold and silver in the United States this year will be nearly double the amount of any previous years.

PROGRESS OF VICTORIA.—We have been favoured by the Government Statist with the Register of the Colony of Victoria for 1878, which shows that fair progress is being made. The total pensions paid were 31,073, in 1877 8, against 26,410, in the previous year. The colony gained by immigration during the year 4776 the number of immigrants being 42,268, against 37,492 emigrants. The mining population on Dec. 31 (including 9638 Chinese) was 36,636, thus continuing the decline which has been constant since 1865, when the number was 64,658. The estimated total value of rateable property was 52,545,665. There were 31,441 persons entitled to vote for the legislative council, and 176,022 for the legislative assembly. The expenditure for construction and maintenance of Victorian railways during 1878 was 935,665, 17s. 11d., raising the total to 16,677,323, 6s. 8d. The births were 26,581 in 1878 (total population 869,040), against 26,010 in the preceding year (population 849,870), and the deaths were 7179 females and 5523 males in 1878, against 7345 males and 5431 females in 1877. The excess of births over deaths was 13,379 in 1878, and 13,234 in the previous year. The statistics are altogether very complete and interesting, and are likely with regard to the return of causes of death to give confidence to those intending to settle in the colony.

THE COMSTOCK SILVER LODE.—The entire yield of this extraordinary lode from 1858, the year of its first discovery to the end of 1878 has been \$291,171,605, to which must be added the tailings, estimated at \$32,500,000, bringing up the whole yield of the mines in 20 years working to \$323,671,605. A sum of \$40,000,000 should be included also for losses in working. The Comstock mines are the most productive, the deepest, and the hottest of the precious metal mines that have ever been opened on the American continent, and probably in the world. They are also the most variable in their results, for while large areas of ground are barren and absolutely worthless, a space of 1200 ft. contained ore bodies which in five years time yielded more ore than the whole lode had produced in the same period. But these great beds of riches are now nearly exhausted, and the owners of the mines are preparing to continue explorations to depths approaching the limits of what has hitherto been considered practicable. The three principal points to be considered are, the heat, the water, and the probability of finding more ore. The heat is already rather a serious matter, for in a good many of the drifts the men work in an atmosphere of 103° to 112°, while in the 2000 ft. level the rock is 130° Fahr. At present the miners work well in this heat, and it is quite possible that ventilation may be devised so as to enable them to encounter still greater elevation of temperature. The drainage question is more serious than that of heat. The ramifications of the mines extend more than 200 miles in aggregate length, and increase at the rate of 12 miles per annum. The pumps are now raising 5,000,000 tons of water every year, and the upcast shafts by which the air current leaves the mines send up a volume of vapour 40 ft. high. As the mines are 1000 ft. deeper than the Carson river, in the plain of which they are situated, the

drainage of a large area will have to be accounted for, in addition to the possible or probable reservoirs of water which may be tapped, as excavation goes on. With regard to the finding of fresh ore at deeper levels, the prospects are at present somewhat theoretical, but Prof. John Church, who has been examining the lode on a Governmental enquiry, considers that the chances of rich ore are sufficient to warrant the further preparations. The following are the amounts of dividends paid last year by some of these Nevada mines:—

	Total dividends.	Dividends in 1878.
Belcher	\$15,397,200	—
Brodie	800,000	\$ 800,000
California	24,840,000	7,020,000
Consolidated Virginia ..	41,040,000	5,400,000
Eureka Consolidated ..	3,400,000	1,650,000
Grand Prize	400,000	200,000

REPORT FROM CORNWALL.

Sept. 4.—Our hearts have again been gladdened by another rise in the tin standard, and made under such conditions that we have a lively sense of further favours yet to come. There can be no doubt now surely in the minds even of the least sanguine that matters have taken a definite change. There are those who hold that the disarrangement in the tin-plate trade would have exercised a prejudicial influence on the immediate prospects of our tin market. This, however, is not so, and we know that the general belief here is that the disarrangement will not be of long duration. Indeed, it has been quite upon the cards that the advance might not have been confined to 2½, but herein the smelters appear to us to have exercised a very wise discretion. As we have again and again pointed out, few things are calculated to do more harm to the permanent interests of mining than a rise which has to be wholly or partially retracted. And, on the other hand, there is great danger also in sudden strides, which lead to undue excitement, even if they are not subsequently withdrawn. What we want is steady progress, and that by all appearance we are likely to have. It would be a complete work of supererogation to point out the gain to our mines and our adventurers by this—now—series of improvements; that is patent to everybody. But we are glad to find also that the influence is felt elsewhere, and in the matter of wages. This has been seen at present in the case chiefly of the girls and boys on sundry of the dressing-floors, but it is certain to spread, and with it will spread also better times for the unemployed in various directions by the extension of present mining operations on the opening up of new ventures. From our enquiries we are led to believe that the surplus labour will not be long of absorption.

The leading local event of the week has been the holding of the annual exhibition of the Royal Cornwall Polytechnic Society at Falmouth, and in conjunction therewith the annual meeting of the Miners' Association (both of which will be found fully reported elsewhere in our columns). The exhibition has been of an interesting and useful character, fully up to the average, but not including so many matters of the first mechanical moment as some of its predecessors. The one drawback has been the regretted absence of the president—Mr. Richard Taylor, F.G.S.—from a somewhat sudden attack of illness. Mr. Taylor is now, since the death of Sir Richard Vyvyan, the one surviving member of the officers of the first exhibition of the Society, and from his wide experience in mining matters, which may fairly be pronounced unrivalled, an important address was expected. His place was, however, kindly and efficiently filled, almost on the spur of the moment, by Canon Rogers.

It is quite on the cards that more important extra Exhibition work may be done by the society this coming year. A committee has been appointed to examine into the working of Capt. Maynard's newly improved calibrator, and the curator, Mr. R. N. Worth, F.G.S., in the course of his survey of the contents of the Exhibition in the hall on the opening night, stated that it had been proposed to appoint a commission to enquire into the merits for Cornish mining of various kinds of explosives. This is a matter of considerable value, and it is to be hoped there will be no difficulties in the way of carrying it out.

In conjunction with meeting of the Miners' Association (which also lost its president by the illness of Mr. Taylor), a successful bazaar was held to dispose of the articles left unsold from the fête at Trehid.

Much regret is felt at the death of Mr. S. Higgs, F.G.S., formerly of Penzance, in Australia, whither he went some years since as manager of the Wallaroo Mines. He died by being thrown from his horse.

TRADE OF THE TYNE AND WEAR.

Sept. 3.—The shipments of steam coal have been very heavy during the week, and this trade has kept well up during the past summer, a full and steady business having been transacted in the best qualities; on the whole, this business is in a satisfactory state, but a few of the second-class works are not quite fully employed. This is, however, the exception at present. The future prospects of this industry are fair, and it is expected that the time is not far distant when a thorough revival of trade will take place. The shipments at Tyne Dock have been fully an average during the week, and best gas coal works are doing well. House coal works are also busier, the demand for this class of coal improving as the season advances. The demand for coke and for manufacturing coal is still rather slack. A serious accident occurred at the Castle Eden Colliery on Tuesday, the side walls of one of the shafts having given away. A large quantity of debris fell down and destroyed the brattice, and also the steam and water pipes; the shaft, indeed, is a complete wreck, and some days must elapse before it can be cleared away and the pits got to work. At the Whitburn new winning, now called the Marsden New Works, the sinking of the first shaft through the shales is proceeding rapidly, by the ordinary method—that is, by sinkers and blasting—and the second shaft is nearly completed to the water feeders. The Chaudron system will be commenced with this shaft very shortly, and the shaft put down below the water-bearing strata by this means.

The iron trade has been very quiet, and to effect sales makers have had to abate something from their quotations—generally 3½d. No. 3, 3½d. No. 4. Some makers ask more money, and are firm at the higher rates, as the reports from the Glasgow market are much more favourable. Some small deliveries of Cleveland pig were reported last week for America, and larger orders are expected. There are no hopes of extensive orders from the States for steel or finished iron. A considerable increase in the shipments of pig-iron from the Tees ports and Hartlepool is noticed for the past week, the total being about 19,000 tons, and the special feature of the shipments is the increase to Stettin, Hamburg, and Rotterdam and other ports for Germany, and the Baltic. More iron is also being sent to Wales. The shipments of manufactured iron from Hartlepool have also been fair.

At Middlesbrough on Tuesday the market was more largely attended than for some months past, and again a cheerful feeling reigned. Actual prices were advanced 6½d. per ton for Cleveland pigs. Market decidedly better, owing to influence of Glasgow, and owing also to much increased demands both for inland and abroad. We understand that a firm here has sold a very large quantity of Middlesbrough pig for delivery in the United States during the next three months. To-day makers have quoted 35s. for No. 3 G.M.B., and 34s. 6d. has actually been realised. No. 4 forge was quoted 34s., but orders were placed at 33s. 3½d., and in a few cases 33s. 6d. Connals stocks is increasing, 82,250 tons being in stock to-day. Exports of Cleveland pigs are increasing and stocks falling. The new mills and forges at work are receiving more orders, and men are making better time. The steel trade is improving at Eston and at Mr. Sutherland's steelworks at Gainsborough, and upwards of 4000 steel wheels and rollers are on order. The reduction of wages at Eston Steelworks has been accepted. Ship-plates are firm at 5½d. to 5½d. 2s. 6d.; angles, 4½d. 15s. The iron shipbuilding trade is very flat, and orders are anxiously looked for. The coke and coal trading are quiet.

Reports from the Teesdale Mine, worked by the Teesdale Mining

Company, continue favourable. The annual meeting of shareholders was held on Friday, when it was stated that the workings had of late been considerably increased, and Holmes' level and the west end stopes had yielded large quantities of lead ore. The prospects of this mine are highly promising, and the workings are capable of great development. A valuable new vein has been discovered lately, and an increased number of men will be employed. The Weardale Lead Mines, which have been closed nine months, were re-opened a few days ago. The usual letting of bargains took place at St. John's Chapel on Friday, and over 200 men were engaged. It is expected that shortly this number will be greatly increased. The chemical trade continues to improve, and further orders have come in from America. There are numerous enquiries for next year, but so far little has been done for forward delivery. Prices are advancing. For prompt shipment quotations are:—Soda ash, 48 to 52 per cent. (3d. less 5 per cent.); bleaching powder, 5½d.; soda crystals, 2½d. 17s.; bi-carbonate of soda, 8½d. 10s. A general meeting of the North of England Institute of Mining and Mechanical Engineers will be held on Saturday, when the following papers will be read:—"On an Automatic Expansion Gearing for Winding-Engines," by Mr. John Daglish. "On Condensation in Steam Pipes," by Mr. W. J. Bird.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Sept. 4.—The meetings of the iron trade this week maintained the improvement which has been manifested during the past few weeks. Pig-iron was reported to have gone off since the previous gatherings in considerable lots, and at firmer prices than for some time past. This week a rise of from 1s. 6d. to 2s. 6d. per ton is here and there being secured for pigs made in other districts than South Staffordshire of high quality required for early delivery. Even at the advance makers are not as a rule prepared to accept orders which will extend into next year: 3½d. for hot-blast all mine iron, and 4½d. for cold-blast sort, are the firm quotations of best native makers. The manufacturers of finished iron are experiencing an active demand, and the sheet firms, who do business largely with the galvanisers, are somewhat elated at the change which has of late come over their department. A few of them for immediate delivery are getting an advance of half-a-crown a ton. Galvanised sheets are not to be had at under a rise of 25s. per ton, and 14½d. is quoted for 24 w.g. in London. In a few days time a rise of altogether 30s. a ton will be demanded, for spelter is rapidly going up. A statement is current, but is not altogether believed to have much authority, that iron rail orders to the extent of 4000 tons have lately been placed in this district. The coal trade is unaltered upon last report.

The improvement in trade as bearing upon the wages question is being discussed at meetings of the colliers in various parts of the district, but it is being wisely determined to postpone any definite action for a time. The proposed emigration scheme is being ventilated amongst the men, and branches are to be formed in certain of the localities. Several of the pits owned by the Patent Shaft and Axletree Company (Limited), in which the paying measures have been worked out, have been closed, and the directors expect to save in this one item alone more than 4000l. a year in pumping water. The late heavy rains have caused apprehension amongst colliery owners as to the underground flood. It is, however, reassuring news that the Mines Drainage Commissioners are this week setting to work the powerful most pumping-engine in the Tipton district.

The Exchange closed in Birmingham this afternoon as firm as a week ago, and makers expressed themselves fairly satisfied with the orders that had been placed. Contracts far ahead were generally refused, even when a small advance was offered. Some galvanised sheet firms reported the receipt from merchants of Australian orders that had come by cablegram. Others have just booked a few good South American contracts, in each case at the rise. In Cannock coalowners determined to withdraw their circular demanding boat registers from the dealers, and instead to alter the gauge stack in their own favour.

In North Staffordshire all descriptions of finished iron are in better request this week than they were a fortnight to three weeks ago, and certain of the mills and forges are making longer hours. Some good orders have lately been received from the colonies, and trans-Atlantic enquiries are also finding expression. Pig-iron has not yet benefited to the extent which marks the manufactured iron trade. Still, a better tone marks this branch likewise, and enquiries for forward delivery are more numerous. Owing to the improvement in trade the proprietor of the Teleries Collieries, Tunstall, has allowed his men to resume work at a drop of only 5 per cent. instead of 10 per cent., for which notice was given. At other of the collieries the strike still continues.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

Sept. 4.—Very little change of late has taken place in the lead mining district, but the future looks rather more promising than it did. The returns for last year it may also be said were more promising than for some previous years, although the Millecote is credited with nearly one-half of the entire produce of the county, the Mill Dam at Great Hucklow coming next. In the raising of lead economically experience has shown that plenty of capital with the best pumping and other machinery are the great essentials, and of this we have the strongest proof in Derbyshire, where the Messrs. Wess have raised nearly two-thirds of all the ore produced in the county, whilst the returns from 130 mines only give a total of 309 tons. The lead, too, does not appear to give any percentage of silver as that in most other districts does, and it appears from the statistics that less silver is now obtained from the ore than there was a few years ago taking all our mining districts into account. The reason for this is certainly anything but clear. In some of our iron-making districts there has been a little more activity, and Derbyshire pig has sold rather more freely, but there has been no material improvement as regards the manufactured articles. At some of the foundries there is a trifle more being done in pipes and ordinary castings. There is just now a better feeling with regard to coal, the price of which is still very low, but the business done in even household quantities for the season is fully equal to what it was for the corresponding period of last year, thanks to the changeable nature of the weather. From Clay Cross, Blackwell, Eckington, Grassmore, and other large collieries having a connection in the Metropolis, a steady trade has been done over the Midland to St. Pancras and the depots. A fair tonnage has also been forwarded to Northamptonshire, from which large quantities of ironstone are imported. Along the western branch of the Midland system by way of Birmingham, Worcester, and Cheltenham, coal from the district also finds its way. Steam coal for exportation has been quiet, whilst the consumption for the local furnaces and manufacturers has been less than previously. Of late more has been done in coke for ordinary smelting, a considerable quantity being sent into Sheffield.

In Sheffield there is a general feeling that the tide of improvement has set in, and that it will increase in volume as the year gets towards the end. Some of the branches that have most felt the change are those that in the earlier part of year were the worst off, so that many men are now on full time for many months. The mills in particular appear to be working well, and this not in one description of material, but in nearly all. Our own Government have some heavy contracts for armour-plates being worked off at the establishments where such are made, and then there are heavy gun blocks and other ordnance material in hand, so that the Sheffield workmen have no need to condemn the policy of the Government, seeing that it has been a marked source of benefit to numbers of them, and at a most critical period too. Wheels, axles, tyres, and connecting-rods meet with a better sale, whilst makers of edge tools are busier. A large quantity of Bessemer steel is now being produced, and a good deal is being used in the manufacture of certain description of cutlery, &c., but the bulk goes through the rail mills, and these are likely to have a long and busy season; for in addition to the heavy Canadian orders recently received others are expected. It is true that the contract prices are low, but it is for

that reason that the orders have been secured, and there is a little profit left at the finish. For crucible steel there has been an improved demand for various purposes, and many plates for ships and boilers are now being made from that material. There has not been much change with regard to cutlery, the business doing, as a rule, being steady, but not brisk, what enquiry there is being for best qualities of knives.

The South Yorkshire coal trade is much as it has been for the last two or three weeks, being certainly better than for some months previously as regards "softs," but this has in no way affected prices, which are still unremunerative. In steam coal the season has not been so active as in some former years, despite the fact that prices have been lower than for some years past. A fair tonnage of coal, however, has been sent to Goole, for which during the week several cargoes have been cleared for Cronstadt, Calais, Gravesend, Sandwich, Rochester, &c. There has not been so much activity in the business to Grimsby, where large quantities of South Yorkshire hard coal are shipped in the open season to the Baltic.

The Northfield Iron and Tyre Company (Rotherham) annual meeting was held a few days ago, when it was stated no loss had accrued from the year's working, whilst additions have been made to the plant. No dividend under the circumstances was declared.

Advices just received from New York state that there is a growing demand for rails, and that orders for from 10,000 to 12,000 tons have just been sent to England, and it is expected that some portion will be placed in the hands of the Sheffield makers.

REPORT FROM MONMOUTHSHIRE AND SOUTH WALES.

Sept. 4.—The Alexandra (Newport, Mon.) Dock Company has held its half-yearly meeting, when the usual dividends at the rate of 6 and 8 per cent. per annum were declared on the first and second preference shares. It is believed that next year the original shareholders—long left out in the cold—will receive something in the way of dividend. The Penarth Harbour, Dock, and Railway Company's half-yearly meeting has been held, at which a dividend of 44 per cent. was ordered. The prosecution of the West of England Bank directors entered upon its seventh day to-day, and seems likely to go on for weeks.

Fourteen haulers at the Tynybedw Colliery have just been fined 20s. each damages and 7s. each costs for illegally absenting themselves from their employment. It was stated that these men coolly stayed away in order to attend some neighbouring sports. The loss sustained by the company was said to be 21*l.* and they had also lost a contract for 700 tons of coal. A meeting of colliers has been held at Merthyr, when it was decided to call a special delegate meeting, in order to discuss the necessity of forming a Union of miners for the district. Past experience has evidently been of little value. Six delegates were also chosen, four of whom are to be selected to give evidence (if permitted) before the Commissioners on Mining Accidents.

That there is an improvement in the iron industry can no longer be a matter of doubt. Advices which come to hand from America are encouraging, for they point to a good demand in that quarter. There is a run on railway iron on account of the United States, and several fair orders in hand. During the past week some 3000 tons have been shipped to the United States on behalf of the Rhymney Iron Company alone. The low prices are the main bone of contention, but may we not hope that with any increased demand will come slightly enhanced prices? After all, one must not be too sanguine, although matters do certainly look like a stirring up of the dry bones, for the improvement may be only a temporary spurt, which will pass away as quickly as it came. The enquiry for Bessemer steel rails seems hardly so good. One hopeful sign comes from the adjoining Forest of Dean, whence it is reported that an ironmaster has withdrawn notices to terminate contracts with the men. On the other hand affairs at the Mellinriffith and Pentreth works look very gloomy. A large number of persons are thrown out of employ, and the Pentreth furnaces are being blown out. The Garth ironstone mine, too, has been stopped. It is worthy of record that the massive steel ropes to be used in lifting the ill-fated Grosar Kurfurst (German ironclad) are being prepared at Cardiff, at Sir George Elliott's works. The ropes are 8 in. in circumference, and are of the finest plough steel. The fittings are all of pure cast-steel, and the strength of the ropes is immense.

The Tin-Plate Trade is not quite so active, and business is unsettled. It was thought that affairs between masters and men relating to the wages reduction might have been amicably adjusted, but such at present has not been the case. Some of the works in the Swansea and Llanelli districts are idle. A meeting of manufacturers is to be held next Monday.

The Coal Trade during the past week has been active. The pits in many cases have been better employed, and the output is consequently larger. Shipments, too, have been rather above the average. The demand for steam coals is good, and prices rather firmer, and house qualities moderately active. The strike at Dinas has ended, but the Tredegar colliers have gone out owing to a wages dispute. The Forge Colliery, at Abernant, was stopped last week in consequence of being flooded during the heavy storm. Work was to be resumed this week. The patent fuel trade is sluggish.

THE SOUTH WALES COLLIERY COMPANY.—From the accounts for the half-year ending June 28 we learn that the company has sustained a further loss of 451*l.* 15*s.* 5*d.* This includes the large sum of 53*l.* 12*s.* 6*d.* loss on horses—ten died, three were necessarily slaughtered, and one was killed by an accident. In consequence of an accident in February last to the up-cast shaft at Cwm Tylery it became necessary to wind coal at the Rose Heyworth pit. Preparations underground are in progress for raising the main output of steam coal through this pit regularly. The quantity of steam coal raised during the half year was 85,223 tons 19 cwt. The average cost thereof put into trucks, 5*s.* 10*d.*; and the average selling price, 4*s.* 10 23*d.* The board received with much regret the resignation of Mr. Challis, the late chairman. They elected Mr. Howard J. Kennard to occupy that position, but he having ceased to hold the necessary qualifications, the chair became vacant. The board in April last elected Lieut.-Col. T. Heyworth to the post of managing director. To fill the two vacant seats on the board, the directors have elected Mr. Richard Potter, a gentleman of very high standing in the commercial world, and well known to the proprietors, and Mr. E. W. Kelly, a gentleman residing in the district, having a practical knowledge of colliery management. The directors have made a call of 10*s.* per share, making 24*l.* 10*s.* called up.

REPORT FROM THE FOREST OF DEAN.

Sept. 4.—We are pleased to report some little improvement in the Coal Trade since the date of our last report. Orders have arrived to hand somewhat more encouragingly, and as a natural result pit work has been more active, and the colliers more fully engaged, averaging, it is said, five days a week. The Iron Trade is still in a sluggish condition, but slightly tends in the direction of improvement; and, as we intimated in our last, that the sweeping notices put up at the Cinderford Ironworks for the termination of all contracts at the end of August, and the probability of a blow-out of a furnace, might be expected to end in a re-adjustment of matters rather than a literal fulfilment of terms, we are now able to report their withdrawal, and the continuance of the previous *status quo* relationship. To use a natural figure, the firm is resting on its own ready for the rise of the tide which has begun to flow, but the sound of which has little more than reached this district as yet, but which we hope will ere long be beneficially felt throughout the United Kingdom. At most of the iron mines ore getting is on a limited scale; at numbers, in fact, next to nothing is doing, or literally nothing at all, the Messrs. Crawshaw's mines being almost the only exception. The Tin-Plate Trade is more fully employed just at present, but about which much uncertainty is felt, and a good deal of matter of complaint circulates as an undercurrent among workmen engaged in the manufacture.

What we stated in our last in regard to the local forge still applies—fairly employed, but small profits and low wages. We may also report that influenced by the news of a rise in iron those who have idle iron mines in West Dean talk of re-starting them if improvement advances, and should such turn out to be the case the advent of activity in the western side of the Forest will be welcomed by its inhabitants as a great boon. On the 25th ult. a fatal accident occurred at Hoywood Colliery, the property of the Littlelean Woodside Coal Company (Limited). The adjourned inquest on the death of the workman, Thomas Church, was held on Tuesday evening at the Globe Hotel, Cinderford, near the colliery, by Mr. Carter, the district coroner, and a respectable jury. In the course of the enquiry it came out in the deposition of witnesses that some very primitive methods of working have been adopted at that colliery. For instance, at an adit part of the way down the pit a moveable floor or platform has been in use, extemporised as required for bringing out carts of coal to be hauled by winding to bank. At the place named a sill is fixed round the shaft, and when the floor was wanted the men had to stand at the entrance of the adit and put down across the shaft loose planks one after the other, standing on them as fast as put down, until about half the distance was covered, when what was called half a moon was put down. On the 26th ult. Thomas Church and Frederick Holloway were thus

engaged in putting planks across, when Church moving to take up the lamp stepped on to vacuum and fell to the bottom—a distance of 50 yards—and was instantly killed. His widow stated that his leg was broken, and his brains knocked out. Mr. Cadman, Inspector of Mines, examined by the Coroner, said that he had never known such a method of working, and considered it most dangerous, and in place of such a method he recommended a proper cage with catches and the usual safeguards, and to bring all the coal to one landing. In these views there was a unanimous concurrence on the part of Coroner, Inspector, and jury. The jury gave their verdict—"That deceased was killed by accidentally slipping and falling from the upper landing into the Haywood pit." But after their verdict they added their recommendation that the above specified improvements in working should be adopted. The manager was, therefore, called in and made acquainted with the recommendation named, when he at once engaged to carry out the same. We may make an additional remark in regard to the verdict. Frederick Holloway, the only person who was with the deceased at the time of the accident, did not say that Church "slipped," but that he stepped over the side of the plank and fell down the pit. And the widow stated at the end of the inquiry that her husband had feared he should lose his life by that dangerous way of working. The jury gave their verdict to the widow; and all present evidently sympathised with the poor woman in her loss and trouble. The case shows the necessity and importance of adopting all prudent precautions for the safety of the workpeople; and the Coroner very properly remarked that although the changes suggested would involve expense, men's lives were of more value than money.

EXPERIMENTS WITH FIRE-DAMP AT WHARNCLIFFE SILKSTONE COLLIERY.

At the British Association meeting, Prof. G. Forbes, F.R.S.E., submitted the report of the committee on instruments for detecting fire-damp in mines. From the model shown by Prof. Forbes last year, the committee had constructed two new instruments, which appeared to them to answer the purpose of measuring the quantity of fire-damp in a coal mine. The one was of large size and was worked by an electric battery. The other was small, portable, easily worked, and it answered all the purposes for which it was required. Both instruments were founded upon the facts that sound travels quicker in light gases than in dense ones, and that air which is contaminated with fire-damp is lighter than pure air. The velocity of sound in different qualities of air was compared by noting the lengths which must be given to a brass tube to cause it to respond to a tuning fork. The accuracy of the instrument was such that the percentage of fire-damp could be determined with an error of considerably less than 1 per cent. On Monday the committee were enabled to descend the Wharncliffe Silkstone Colliery, in the neighbourhood of Sheffield, by the kindness of the manager, Mr. George Walker, who accompanied them, with a number of gentlemen interested in the experiments. This pit was a depth of 200 yards. Mr. Walker had kindly arranged to stop the ventilation of the pit at the end of the workings. After proceeding for a mile through the galleries they reached this spot, where they hoped to find a large amount of fire-damp. But only a slight quantity was to be found, the Davy lamp generally showing but a feeble blue cap, and the Forbes' indicator registering only small percentages. Disappointed here they were taken by Mr. Walker to another working where it was thought possible there might be some gas. In a crevice in the roof a flow of gas was found forming a stratum of light gas. The instrument indicated quantities which gradually increased as the tube got filled with the air in the crevice from 14 to 28 per cent. But the small quantities of gas rendered the experiment unsatisfactory, and the committee were then taken to a disused part of the mine where it was known there was a blower. Gas in sufficient quantities was found, and the instrument registered gas with more readiness than the Davy lamp. But the greatest quantity registered was 6 per cent., or 12 times the smallest quantity which the indicator detects. The fact was that there was in the present form of the instrument a difficulty in filling the tube with the air of the place under examination, and the committee considered that it would be well to alter the instrument so as to obviate the difficulty. From the experiments they could assert that this instrument was capable of detecting and measuring fire-damp even in small quantities.

FIRE-DAMP IN MINES.—M. Louis Gossiaux, manager of the coal-pits of Gardanne, in France, is having constructed in Belgium a new appliance for giving timely warning of the presence of fire-damp and measuring it. An experiment is shortly to be made with the instrument.

EMPLOYMENT OF WOMEN IN COAL PITS.—The Belgian authorities have not as yet recognised the advisability of prohibiting the employment of women and girls underground, although public opinion has done a good deal to discourage this degrading practice. In 1868, in the collieries of the province of Liège were employed 940 females out of a total number of 15,686. In 1877 the numbers were, above-ground, 1086 women above 15 years of age and 321 girls under 15; underground were 463 women above 15 and 67 girls under 15. According to the recent report of the chief mining engineer of this province these numbers have still further decreased, the underground female workers being only 453 altogether. It is to be hoped that the Belgian colliery owners will discourage the system until it dies a natural death. In Great Britain the employment of women underground was forbidden by the Regulation of Mines and Collieries Act 1842 (5 and 6 Vic., c. 99), and although there is no law to forbid their working above ground at the pit bank, there is in many coal districts a feeling against it.

LEAD IN THE UNITED STATES.—Utah and Nevada will show a decrease in the production of lead for 1879 of over 17,000 tons, while the falling off in Missouri from causes which we have already explained in previous articles, will be about 7000 tons. Colorado will show an increase of about 10,000 tons over 1878; but with an increased demand estimated at 25,000 tons, owing to great activity in business, there seems by returns from all the chief centres of production a deficiency of—1st, 14,000 tons from last year's output; and 2nd, if the increased demand should be 25,000 tons, or even 20,000 tons, then the market will be short from 30,000 tons to 35,000 tons. It is very evident that the supply is much less than last year, as the stock in first hands in New York and St. Louis is merely nominal. The active demand that will set in after summer is over with the opening of business must cause an advance of several pounds per ton. Of the 725,000 tons of lead mined in the United States during the year 1878, no less than 30,000 tons were used for paint alone. New England uses 7000 tons for pipe and sheet lead per annum. St. Louis requires over 5350 tons for these purposes. The other uses of lead are numerous, varied, and extensive. A large amount enters into the manufacture of shot and cartridges.

NICKEL MINING IN NORWAY.—The production of nickel has become an industry of considerable importance of late years. The first mine was opened in 1846 by an English company in the valley of Espedal, in the mountain district of Søndre-Gudbrandsdal, but this was closed in 1857 in consequence of the difficulty of approach and the absence of communications. Subsequently to this, mines were opened at Ringerike and Bamble, near Skien, and from 1861-5 there were 11 nickel mines worked, averaging 3450 tons per annum. In the latter year the production rose to 5200 tons from 14 mines, and it gradually increased until 1875, when it attained its maximum at 34,550 tons. The greater part of this yield is exported in the shape of ore, Norway being the principal source of the nickel supply, and furnishing quite one-third of the yield of the world. A part of the ore is smelted near the mines, averaging between 1871-5 a yearly make of 110,500 kilos. About 465 workmen are employed in nickel mining, though the number has been diminished within the last year or two, owing to the lessened demand.

SILVER-LEAD MINING IN SARDINIA.—In the present improving condition of the lead trade attention is naturally directed to lead mining properties which the recent depression has thrown upon the market, and the preference is naturally given to those which have been so far opened out as to give promise of speedy returns of lead ore. The liquidator of the Gibbas Silver-Lead Mining Company of Sardinia is now advertising in another column of to-day's Journal the sale by auction of the mines and plant, and from the accounts given of the property it appears to be well worth the attention of capitalists. Mr. E. Y. Dunn, the manager, who had charge of the mine during the campaign 1877-78, writes, that being well acquainted with the metalliferous features of the set, he is of opinion that with a moderate outlay, judiciously applied, the mine will produce large and profitable returns of lead ore. The inventory of the principal machinery shows

that there are three good engines, with an abundance of boilers, patent water beaters, &c.; ample pumping connections and pitwork, crushing mills, dressing machinery, and winding machinery, whilst the plan and section of the workings show that a considerable amount of progress has been made. The set is well situated, within a mile of Porto Corallo, where the mineral is shipped in barges, and is 80 miles from Cagliari, to which there is a good Government road, so that there are great facilities for economic working.

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brake; 1 PORTABLE ENGINE, 2 1/2 in. cylinders, with cog and cog wheel at-
tached; wire rope and chain; capstan drum, cog wheel and stand attached; 100
fathoms 4 1/2 in. capstan rope; viaduct (20 fms. long), with iron stands, wood rail-
ings, &c., complete; portable winding engine, 2 1/2 in. cylinders, with large cog
wheel, whim cage, and connections; 200 fms. flat wire rope; 60 wood tram wagons,
with iron wheels; side plates, boiler, and rod plates; several tons of rail iron of
various sizes; smith and miners' tools; several weightbridges, complete; several
horse whims, with wire rope and chain; 525 fms. of railroad and wood sleepers
under ditto; 70 fms. 18 in. pitwork; 50 fms. 14 in. rods; rod plates; staples and
glands; bolts, &c.; 70 fms. double skip road; dials and stands; level and stand,
and levelling staff; ACCOUNT HOUSE FURNITURE; office tables; chairs; and
desk; copying press; iron safe; clocks; looking glasses; iron beds, bedding,
mattresses, wash stands, toilet sets, &c.; venetian blinds; also about 50 tons of
ochre, and 12 tons of sulphur mundio or iron pyrites.

AT THE TREMBLE MINE.

50 in. cylinder PUMPING ENGINE, 10 ft. by 9 ft. stroke, with 2 boilers, shears
and shive; balance bob; portable engine, 2 1/2 in. cylinders, with winding cog at-
tached; wire rope and chain; capstan drum and stand, with cog wheel and fly
wheel attached; capstan rope; 1 1/4 in. doorpiece; 1 1/2 in. 6 ft. wind bore;
shives; pumps; boiler; and parts of portable engine; rod plates; railway
weightbridge; double power winch; 20 ft. water wheel, with crank; small and
large cog wheels; circular saws; tram carriage wheels; kitchen stoves; bed-
steads; tables; smith's shop; bellows, anvil, smith's tools; mandrill; grinding
stone, and frame; Burleigh Rock Drill, with stand, and hose; about 8 cwt. of
lead ore, and 500 tons of iron ore.

AT THE HALWYN MINE.

Shears and shives; shaft tackle and shive; iron winding cage and cog wheel;
15 fms. 8 in. drawing lift; 18 fms. of ladders.

AT THE GRAVEL HILL MINE.

25 in. WINDING ENGINE, 7 ft. stroke, with fly wheel; iron cage, and 1 10 tons
boiler complete; flat wire rope and chain; balance bob and iron rod attached;
shaft tackle, with 2 shives; landing brace and flooring; tram wagons; large
and small pulleys and stand; horse whim, cage, and launders; 30 fms. 8 in.
plunger lift; rods and plates; 30 fms. skip road; portable engine; 2 1/2 in. cylin-
ders; pumping gear and crank; balance bob, and chain; 12 in. drawing lift;
100 fms. 6 in. wood bob; 20 sets of tram wheels; several cwt. of chain and bar
iron; 1230 fms. of railroad wood sleepers; about 600 tons of iron ore.

AT THE RUTHERS MINE.

50 in. cylinder PUMPING ENGINE, 10 ft. by 9 ft. stroke, with 1 boiler 11 tons;
shears and 2 shives; capstan; 3 horse whims; horse whim kiddles; 180 fms.
wire rope, and chain; iron tram wagons; weightbridge; carpenter's bench and
tools; bolts; vice; kiddles; chests; bucket rods, and sundry iron pumps; and
about 40 tons of manganese.

AT THE WHAL EDITH MINE.

Wood carpenter's shop; old iron and wheels; old tube; saw pit frame; several
pieces of timber; 7 1/2 ft. 9 in. pumps, and matching; 7 iron boxes; part of balance
bob, together with numerous other effects in general use in mines.

To inspect the above, apply to the Bailiff in charge at the above mentioned
respective Mines; and for further particulars to Mr. JOHN HENRY HAMLEY, the
Official Liquidator of the said company, Truro; or to

HODGE, HOCKIN, AND MARRACK, Truro.
(Solicitors for the said Official Liquidator.)

Dated Stannaries Court Office, Truro, this 30th day of August, 1879.

IN LIQUIDATION.

SANTANDER ZINC MINING COMPANY
(LIMITED).

MESSRS. J. AND C. B. PARSONS WILL SELL, BY AUCTION,
at the Auction Mart, Tokenhouse-yard, London, E.C., on Tuesday, the
9th September, at Two o'clock, by order of the Liquidator, the

LEAD MINES

Belonging to the above company, situated at RABAGO, near San Vicente, in the
province of SANTANDER, SPAIN.

These mines have been worked for lead ore from 1874 to 1878. Nearly £10,000
has been expended in developing them. A powerful steam engine and machinery
for dressing lead ore has been erected at a cost of over £2000. A good house is
built on the property for the manager. Tools, weighing machine, furniture, rails,
tramwagons, and various articles, valued at £350, will be included and offered in
One Lot.

This is a first-class opportunity for any party who can command £4000 or £5000,
as in the first cross-cut there is a large quantity of lead in sight, and about 100
tons underfoot in the stope. The gallery has been driven 300 yards on a lode 17 ft.
wide towards the winze, where ore of 60 per cent. was found but could not be
taken out for the great influx of water. Another 80 yards will cut the ore under
the winze and drain the same.

A further outlay of about £300, for extra buddles and crusher will make the
mine capable of bringing out a large quantity of dressed ore monthly, at a profit
of £3 to £4 per ton.

A market has been found for any quantity of lead ore at San Sebastian; and
owing to a decision of the Government, the French company's road adjoining the
Rabago Mines can be used without paying any fees, reducing the cost of transport
from 31s. per ton to 8s. 4d. per ton.

For further particulars apply to the auctioneers, 16, High Street, Bristol; or to
the liquidator, care of Messrs. FOX and WHITTRICK, Solicitors, 35, Corn Street,
Bristol.

IN LIQUIDATION.

ROOKHOPE LEAD MINING COMPANY (LIMITED).

LEASES AND PLANT of the

ROOKHOPE LEAD MINES, STANHOPE, DURHAM, comprising—
ONE PORTABLE AND TWO STATIONARY ENGINES; WATER WHEELS;
CRUSHERS; METAL PUMPS; CAGES; self-acting TRAMWAY, &c.; and
all necessary MINING IMPLEMENTS.

MR. HERBERT H. FULLER is instructed to OFFER the
above FOR SALE, BY AUCTION, at the Mart, Tokenhouse-yard, City,
on Wednesday, September 10th, at One o'clock precisely.

Particulars, with conditions of sale, can be obtained from Messrs. HANCOCK,
SHARP, and HALES, Solicitors, 74, King William-street; from the Liquidators,
8, Austinfrank; and from the Auctioneer, 1, Queen Victoria-street, E.C.

SALE BY AUCTION OF COLLIERY PLANT AT HOWARD'S WEST

HARTLEY COLLIERY, NETHERTON, NEAR MORPETH,
NORTHUMBERLAND.

MESSRS. JOEL AND SON have received instructions
TO SELL, BY AUCTION, on Wednesday, September 24th, and follow-
ing days, the WHOLE of the

FIXED AND LOOSE PLANT

Of the above COLLIERY, consisting of—

300 tons D.H. IRON and STEEL RAILS, 75 lbs. per yard; chaldron COAL
WAGONS, wheel W.L. tyers; WINDING and PUMPING ENGINES, 1 1/2 in.
cylinder 8 ft. stroke per of the Government, the French company's road adjoining the
Rabago Mines can be used without paying any fees, reducing the cost of transport
from 31s. per ton to 8s. 4d. per ton.

The owners reserve the right of withdrawing any of the above before the day
of sale.

For catalogues apply to the Auctioneers, or to Messrs. WEAR and COLLEY, Broad
Chare, Newcastle-on-Tyne, who will furnish any further information required.

COUNTY OF MERIONETH.

SALE OF VERY VALUABLE FREEHOLD FARM AND SLATE QUARRYING
AND LEAD MINING PROPERTY, in the parish of FESTINOG.

MESSRS. WILLIAM DEW AND SON WILL SELL, BY
PUBLIC AUCTION, at the Penwern Arms Hotel, Festinog, on Tues-
day, September 30, 1879, at One o'clock in the afternoon, subject to conditions
then and there to be produced,

HAFODSPYTTY, otherwise GAMALLT.

Containing 489 A. Or. 16p. This FARM is distant 1 1/4 mile from Blaenau Festinog.
Some of the BEST SLATE VEINS in the Festinog District are known to run for
a considerable distance through the farm, and both eminent geologists and prac-
tical quarrymen in the neighbourhood have given it as their opinion that a large
and productive output of the finest SLATE could be obtained from the property
with a very moderate amount of labour. Several lodes of LEAD have also been
proved on the property, and could be at once profitably worked.

There is ample water power for driving machinery.
Particulars and lithographed plans, prepared by Mr. O. E. Spooner, of Port-
madoc, C.E., showing the sections of the slate veins and lead lodes, may be had on
application to Messrs. BARNES, JONES, and OSWALD, Solicitors, Messrs. JONES and
JONES, Solicitors, both of Portmadoc; and the Auctioneers, Wellfield House,
Bangor.

FLINT MARSH COLLIERY,
Near FLINT, on the London and North-Western Railway.
TO BE SOLD, BY PRIVATE TREATY.

THE ABOVE VALUABLE PROPERTY is now OFFERED
FOR SALE as a going concern.
Persons desirous to treat should apply for particulars to Mr. J. E. EDWARDS,
Town Hall, Chester, before the 10th of September.

Chester, 28th August, 1879.

POSTPONEMENT OF SALE OF IMPORTANT SILVER-LEAD MINE.

TO BE SOLD, BY AUCTION, within Dowell's Rooms, No. 26,
George-street, Edinburgh, on Wednesday, the 8th October, 1879, at
Two o'clock P.M., instead of 10th September, as formerly advertised, that—

VALUABLE SILVER-LEAD MINE.

Situated in the ISLAND OF SARDINIA, called GIBBAS.
The sett, which is extensive, is within a mile of Porto Corallo, where the mine-
ral is shipped in barges, and is distant about thirty miles from Cagliari, to which
there is a good Government road. There is a full equipment of pumping, draw-
ing, and dressing machinery to be sold with the mine.

SHORT REPORT.

"Llanbadarn, Cardiganshire, 1st August, 1879.
"Having had charge of the Gibbas Mine during the campaign of 1877-8 and
being well acquainted with the metalliferous features of the sett, I am of opinion
that with a moderate outlay judiciously applied the mine will produce large and
profitable returns of lead ore. (Signed) S. Y. DUNN.
For particulars, apply to Mr. JAMES MARTIN, C.A., 49, Castle-street, Edin-
burgh; or to Messrs. GILLESPIE and PATTERSON, W.S., 81A, George-street, Edin-
burgh, Scotland."

TO RAILWAY WAGON BUILDERS, COLLIERY
PROPRIETORS, AND OTHERS.
RE BAXENDALE AND HEALD.

TO BE SOLD, BY TENDER, the WHOLE of the STORES,
MATERIAL, WAGONS, REPAIRING CONTRACTS, WORKS, and RE-
PAIRING STATIONS, FIXED AND LOOSE PLANT and TOOLS, as a going
concern, or the WAGON MATERIAL, &c., for removal.

The principal works are situated at CHORLEY, LANCAIRE, and LLAN-
TRISSANT, SOUTH WALES, and the REPAIRING WORKS and STATIONS
are at NEWPORT, CARDIFF, GLOUCESTER, READING, PANTYFFYNON,
SWANSEA, and BRITON FERRY. THE FIXED PLANT and TOOLS com-
prise every appliance necessary for building railway wagons on the most econo-
mical scale, and the stores and material on hand are such as would enable any
party taking the same to continue without much additional expense a valuable
business connection. If the stores are not sold in one lot, Colliery Proprietors,
Wagon Builders, Smiths, Wheelwrights, and others, would be able to obtain at
less than cost articles and material which they are constantly using.

Printed detailed specification and any additional particulars will be furnished
on application, and tenders are required to be sent to the Undersigned on or be-
fore the 12th September next.

An inspection of the whole can be made by applying at the works.

RE SIMON LEACH.

TO BE SOLD, ALSO BY TENDER, the WORKS at CHORLEY,
with PLANT, MATERIALS, STORES, &c., similar to the above, particu-
lars of which will likewise be furnished on application to the Undersigned.
Colliery Proprietors, and others, requiring new wagons to be built may, on fur-
nishing specification, obtain tenders at an exceptionally low figure.

DAVIES AND BEE, 5, Winkley-street, Preston.

CRANSTONHILL ENGINE WORKS, GLASGOW.

(ALEX. CHAPLIN AND CO.)

FOR SALE, BY PRIVATE BARGAIN, as a GOING WORK,
the WHOLE STOCK-IN-TRADE and PLANT (including the GOOD-
WILL and LEASE) of the old established ENGINEERING BUSINESS of
ALEXANDER CHAPLIN AND CO.

The business has been carried on for upwards of 30 years with great success, and
it is rarely that so eligible an opening occurs. The STEAM CRANES, ENGINES,
&c., made by the firm, have long had a first-class reputation both at home and
abroad.

The STOCK and PLANT have been valued at £24,500. The Works are in full
going order, and immediate entry may be had.

Sealed offers, endorsed "Offer for Cranstonhill Engine Works, &c.," to be lodged
on or before Wednesday, 11th current, at One o'clock P.M., in the hands of the
undersigned, from whom further particulars may be obtained.

The subscribers do not bind themselves to accept the highest or any offer.

MOORE and BROWN, C.A., 128, Hope Street, Glasgow.

3rd September, 1879.

FOR SALE, a NEW 70 inch cylinder CORNISH BEAM
PUMPING ENGINE, 10 ft. stroke in cylinder and 9 ft. in the shaft,
with steam case, metallic piston, and wrought gudgeon. The false cover, perpen-
dicular pipes, weigh posts, working and nozzle gear all fitted bright. A strong
substantial well made engine, complete, including cast-iron casings for top and
bottom nozzles with bright covers, holding down bolts and wrought-iron caps and
bolts for connection to main rod.

Apply to WILLIAM'S FERRAN FOUNDRY COMPANY, Perranarworthal, Cornwall.
Dated Jan. 29, 1879.

TO COLLIERY PROPRIETORS AND OTHERS.

IN ORDER to CLEAR OFF a LARGE QUANTITY of WAGON
MATERIAL at less than COST PRICE, through the failure of Baxendale
and Heald, and Simon Leach, both of Chorley, in the county of Lancaster, and
Llantrissant, South Wales, wagon builders, PARTIES REQUIRING WAGONS
will please furnish specification and apply for tenders to the undersigned.

SMITHWORK, CASTINGS, BOLTS, NUTS, and other materials suitable for
repairs, ON SALE.
Apply at the Works, or to the undersigned—
DAVIES and BEE, Accountants, 5, Winkley-street, Preston.

TO BE LET, with immediate possession, and direct from the
Proprietor, a VERY VALUABLE

ANTHRACITE COLLIERY.

Situate in the Vale of Neath, Glamorganshire. The colliery is in thorough work-
ing order, and a new winning has just been effected very near to the levels mouth.
The area of coal unworked is very extensive, and of excellent quality.
For further particulars, apply to Mr. T. B. ALLISON, Aberpergwm Estate Office,
near Neath, Glamorganshire.

TO PARENTS AND GUARDIANS.

AN ELIGIBLE OPPORTUNITY is now offered for the
SETTLEMENT of an ACTIVE YOUNG GENTLEMAN IN CANADA.
He will be enabled to obtain his profession as a Solicitor in five, or if he be a G.E.
duate in three years. Cost of living about £150. In the meantime he will have
active work, and obtain a knowledge of the Dominion, which is destined to be-
come

TWO GOLD MEDALS.



SOLE MAKERS—

T & LEEDS FORGE CO., Ltd.,
Leeds, Yorkshire.

FOX'S PATENT CORRUGATED FURNACE FLUES,

NOW APPLIED TO OVER

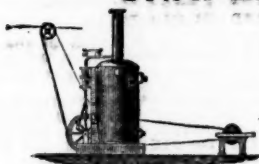
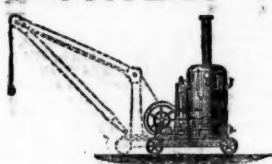
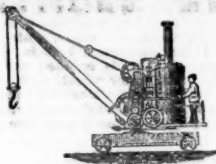
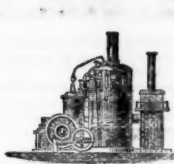
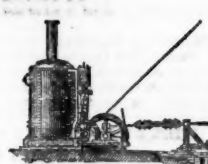


PARIS, 1878.



PRICE LISTS AND
PARTICULARS
ON APPLICATION.

CHAPLIN'S PATENT PORTABLE STEAM ENGINES AND BOILERS.

STATIONARY ENGINE.
No Building required.HOISTING ENGINE.
With or without Jib.STEAM CRANE.
For Wharf or Rail.CONTRACTORS'
LOCOMOTIVE.SHIPS' ENGINE
AND DISTILLER.PUMPING AND
WINDING ENGINE.

* These Cranes were selected by H.M. Commissioners to receive and send away the Heavy Machinery in the International Exhibitions 1862, 1871, and 1872.

The ORIGINAL combined Vertical Engines and Boilers, introduced by Mr. ALEX. CHAPLIN, specially designed and adapted for PUMPING, WINDING, HOISTING, SAWING, DRIVING MACHINERY, and for GENERAL CONTRACTORS' WORK, RAILWAY SIDINGS, COAL MINES, QUARRIES, GAS WORKS, &c.

WIMSHURST, HOLLICK, & CO., ENGINEERS, 2, WALBROOK, LONDON, E.C.
WORKS:—REGENT'S CANAL DOCK, 602, COMMERCIAL ROAD EAST, LONDON, E. (Near Stepney Station.) (2)

FIRST PRIZE MEDAL, ROYAL CORNWALL POLYTECHNIC SOCIETY, 1878.

Rate of Drilling, three to
four times as fast
as hand
labour.

Prices complete, £55 to £70.
HAND POWER Rock DRILL.
SPECIALITIES—
PATENT PNEUMATIC
HAND & STEAM POWER
STAMPS, CRUSHING ROLLS,
PATENT PROSPECTING PLANT, &c.
T. B. JORDAN, SON, AND MEIHE,
ENGINEERS AND CONTRACTORS,
63, QUEEN VICTORIA STREET, LONDON, E.C.,
AND AT
21 AND 22, LINDENSTRASSE, BERLIN, S.W.



READE BROTHERS,

TOWER VARNISH WORKS,
NECHELLS, BIRMINGHAM.
MANUFACTURERS OF

**High-class Varnishes and
Japan,**

For COACH & RAILWAY WAGON BUILDERS,
ENGINE BUILDERS, CONTRACTORS, COLLIERY and
GENERAL ENGINEERS,
LAMP MANUFACTURERS,
AGRICULTURAL IMPLEMENT MANUFACTURERS,
DECORATORS, &c.
Lists and Samples on application.

FRANCIS JENKINS,

GREENFIELD WORKS,

LLANELLY, S. WALES,

MANUFACTURERS OF THE

Improved Solid Steel Shovels, C. S. Forks, Solid Steel
Miners' Shovels, Railway and Miners' Picks,
Steel-pointed Spades and Shovels, Draining and Grafting Tools, &c.

ALSO MANUFACTURERS OF

COPPER WORKS' LADLES,

To which special attention is given.

RABBLE HEADS, PADDLES, AND EVERY DESCRIPTION OF
LIGHT HAMMERED WORK.

JOSEPH FIRTH AND SONS'

New Patent Brick-making Machine

Embraces the following advantages—viz.:
Simplicity, strength, and durability. Compactness and excellence of mechanical
arrangements, large producing capabilities, moderate cost.
It will make 12,000 to 14,000 plastic pressed bricks per day, hard enough to go
direct to the kiln without drying.

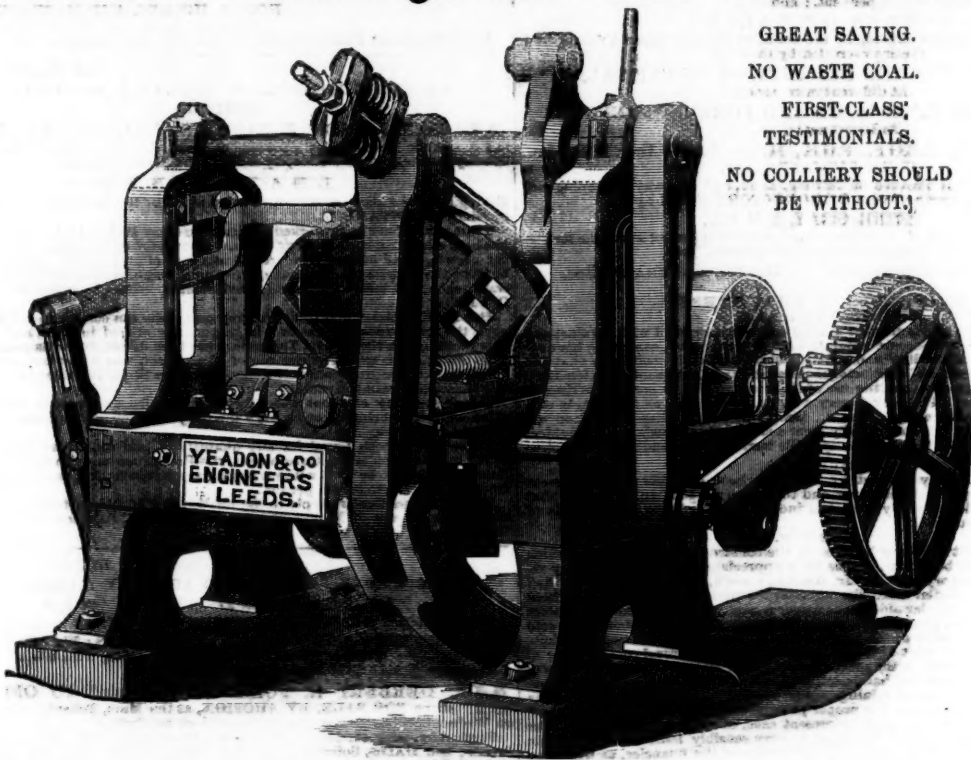
WEBSTER HILL, DEWSBURY.

(See Illustrated Advertisement every alternate week.)

**MONEY LENT, at EIGHT, NINE, and TEN PER CENT., on
FIRST MORTGAGE of FREEHOLDS for IMPROVEMENTS and
STOCKING, sold freeholds in the Province of MANITOBA.**
Address, HERBERT C. JONES, Solicitor, 49, Masonic Hall, Toronto.

THE IRON AND COAL TRADES' REVIEW.
The IRON AND COAL TRADES' REVIEW is extensively circulated amongst the
Iron Producers, Manufacturers, and Consumers, Coalowners, &c., in all the iron
and coal districts. It is, therefore, one of the leading organs for advertising every
description of Iron Manufactures, Machinery, New Inventions, and all matters
relating to the Iron, Coal, Hardware, Engineering, and Metal Trades in general.
Offices of the Review: 7, Westminster Chambers, S.W.
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PATENT BRIQUETTE MACHINE.



GREAT SAVING.
NO WASTE COAL.
FIRST-CLASS
TESTIMONIALS.
NO COLLIERY SHOULD
BE WITHOUT.

These Machines utilise smudge or small coal by making it into Briquettes or blocks of compressed theatfuel rate of 36,000 per day. The cost of preparing, mixing, and making is under One Shilling per ton. The Briquettes sell readily for Locomotives, Household, or other purposes. Full particulars on application to—

YEADON AND CO., ALBION PLACE, LEEDS.

Electric-Bell Signals for Collieries, Factories, Warehouses, &c.,

WITH OR WITHOUT GALVANIC BATTERIES.

NEW SYSTEM—CAN BE RUNG AT ANY PART OF THE ROAD. Cheap, safe, and reliable. Efficiency guaranteed. LINES
OF TELEGRAPH erected and maintained. LIGHTNING CONDUCTORS, &c.
For estimates and particulars apply to—

SYDNEY F. WALKER,

LATE G. E. SMITH,

TELEGRAPH ENGINEER

COMMERCIAL BUILDINGS LONG ROW NOTTINGHAM.

GRAND EXPLOSIVE COMBINED WITH PERFECT SAFETY. MINING MADE EASY—POWER without DANGER.

**The Liverpool Cotton Powder and Ammunition Company's
SAFETY COTTON BLASTING POWDER**

Is the SAFEST, STRONGEST, and most ECONOMICAL in WORKING of all EXPLOSIVES. The MINERS, AFTER a shot is fired, can IMMEDIATELY recommence work. Absolutely SAFE in TRANSIT by boat or rail. PAR EXCELLENCE in every description of MINING, QUARRYING, TUNNELLING, EXCAVATING and SUBMARINE operations. Entirely free from Nitroglycerine.

Offices: 39, OLD HALL STREET, LIVERPOOL.

Works: MELLING, near LIVERPOOL.

AGENTS.—The Company have a few VACANCIES in the chief Mining Districts for really good and thoroughly PRACTICAL MEN. Apply to the Secretary, DAVID ANDERSON, personally, or by letter, at the Offices of the Company.

NOBEL'S DYNAMITE

MANUFACTURED AND SOLD BY
NOBEL'S EXPLOSIVES COMPANY (LIMITED), 149, West George Street, Glasgow.

Supplies may be obtained from any of the following Agents of the Company in Great Britain:—

HENRY KITCHIN and Co., 46, New Lowther-street, Whitehaven.
 F. H. EDWARDS, Forth House, Newcastle-on-Tyne.
 FANSON, ARMSTRONG, and Co., Middlesbro'-on-Tees.
 ALBERT RICKETTS, Dean-lane, Bedminster, Bristol.
 B. READ, Reforme, Portland, Dorsetshire.
 LEIGH and SILLAVAN, Barton House, 66, Deansgate, Manchester.
 GEORGE ROBERTS, George-street, Gloucester.
 J. H. BEAN and Co., 6 Albion-street, Leeds.
 WM. RICH and SONS, 4, Basset-street, Redruth, Cornwall.
 CROSS BROTHERS, 21, Working-street, Cardiff.
 G. WILLIAMS, 6 and 7, Baker-street, Aberystwith.
 WEBB and Co., Llanberis, Caernarvon.

J. T. EACHUS, Holywell.
 JOHNSON and Co., Tower-street, Dudley.
 TODHUNTER and ELLIOT, Market-place, Douglas, Isle of Man.
 ROBERT HAMILTON, 29, St. James's-square, Edinburgh.
 JOHN DONALD, 4, Belmont-street, Aberdeen.
 WILLIAM WATSON, Sunnyside-road, Coatbridge.
 ROBERT HAMILTON, Douglas-street, Dunfermline.
 JOHN D. M'JANNET, Park-place, Sterling.
 CHARLES CUNNINGHAM, 62, Commercial-street, Dundee.
 R. and J. CARSON, 8 and 10, Corn Market, Belfast.
 CLOHERTY and SEMPLE, Merchants' Road, Galway.
 COOKE BROTHERS, 67, Patrick-street, Cork.

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TONITE, OR COTTON POWDER.

THE SAFEST, CHEAPEST, AND STRONGEST OF ALL EXPLOSIVES.

RECOMMENDED TO MINERS, PIT SINKERS, QUARRYMEN AND CONTRACTORS
 AS THE MOST EFFICIENT AND ECONOMICAL BLASTING AGENT EVER INVENTED.

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Agents: DINEEN, SON, and Co., Leeds; JOHN RUSSELL, Whitehaven; R. J. CUNNACK, Helston, Cornwall; J. and W. SMITH, Chapel-en-le-Frith; W. VITCH, Jedburgh, N.B.

PATENT DETONATORS.

FIRST-CLASS DETONATORS

MANUFACTURED FOR THE TRADE ON
 THE MOST FAVOURABLE TERMS.

Apply to—
 The COTTON POWDER COMPANY (Limited), 23, Queen Anne's Gate, London, S.W.

ROCK DRILLS, AND DIAMOND BORING MACHINERY. AIR COMPRESSORS, SINKING AND DRIVING APPARATUS. ELECTRIC FUSES, BORNHARDT'S & BRAIN'S FIRING MACHINES.

Electric Cables, Dynamo Machines, Motors, and Transfer Power Apparatus. Mining and Ore Dressing Machinery.

JOHN DARLINGTON, 2, COLEMAN STREET BUILDINGS,
 MOORGATE STREET, LONDON.

THE TUCKINGMILL FOUNDRY COMPANY,

(TUCKINGMILL FOUNDRY AND ROSEWORTHY HAMMER MILLS),

CAMBORNE, CORNWALL,

Engineers, Iron and Brass Founders, &c.,



REGISTERED TRADE MARK.

MANUFACTURERS OF EVERY DESCRIPTION OF

REGISTERED TRADE MARK.



PUMPING, WINDING, AND STAMPING ENGINES

ALL KINDS OF

**MINING MACHINERY, SHOVELS, AND
 MINERS' TOOLS;**

ALSO OF

BLAKE'S STONE BREAKERS.

ESTIMATES GIVEN UPON INDENTS AND SPECIFICATIONS.

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MANCHESTER WIRE WORKS.

NEAR VICTORIA STATION, MANCHESTER.

(ESTABLISHED 1790).

JOHN STANIAR AND CO.,

Manufacturers by STEAM POWER of all kinds of Wire Web, EXTRA TREBLE STRONG for
LEAD AND COPPER MINES.

Jigger Bottoms and Cylinder Covers woven ANY WIDTH, in Iron, Steel, Brass, or Copper

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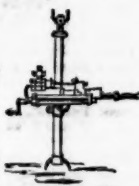
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BRITISH DIVIDEND MINES.

Shares.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pd.
2000 Bryn Alyn, s. Denbigh.....	10 0 0	—	—	0 7 0	0 7 0	Jan. 1877
100000 Carnon, s. Cardigan.....	2 0 0	2 1/2	2 1/2	0 4 0	0 4 0	Oct. 1878
10000 Carn Brea, s. t. Illogan.....	56 7 6	29	30 2 1/2	308 0 0	1 0 0	Feb. 1874
400 Cashwell, s. t. Illogan.....	2 10 0	—	—	1 9 0	0 2 0	Aug. 1876
2450 Cook's Kitchen, s. t. Illogan.....	10 14 9	2	1 1/2	11 17 0	0 7 6	Jan. 1878
240 Davon Gt. Consols, s. t. Tavistock.....	1 0 0	2	1 1/2	116 15 0	0 8 0	July 1877
4298 Dolcoath, s. t. Camborne.....	10 14 10	29	31 3 1/2	113 11 2	0 8 0	Aug. 1879
5000 East Black Croft, s. t. Illogan.....	8 0 0	—	—	0 10 0	0 10 0	Feb. 1877
3000 East Darnley, s. t. Illogan.....	32 0 0	—	—	285 10 0	1 0 0	Aug. 1876
6400 East Pool, s. t. Illogan.....	0 9 9	14	14 15	16 6 3	0 8 0	July 1879
40000 Glasgow Carr, s. t. [30,000 £1 p., 10,000 15s p.]	3 1/2	3 1/2	3 1/2	0 13 10	0 8 0	Aug. 1878
85000 Gossard & Merlyn Cons., s. t. Flint	2 10 0	1 1/2	1 1/2	0 8 0	0 8 0	Aug. 1877
15000 Great Laxey, s. t. Illogan.....	4 0 0	16 1/2	16 1/2	24 15 0	0 8 0	Apr. 1879
615 Gt. Retallack, s. t. Perranabuloe	5 18 6	—	—	0 1 6	0 1 6	May 1876
6400 Green Hurth, s. t. Durham.....	0 6 0	4	3 1/2	2 2 0	0 3 0	Mar. 1878
20000 Grogwinion, s. t. Cardigan.....	2 0 0	3	2 1/2	0 14 10	0 10 0	Aug. 1878
9880 Gunnslake (Clitters), s. t. c	5 5 0	1 1/2	1 1/2	0 13 9	0 10 0	Oct. 1876
2800 Isle of Man, s. t. Isle of Man.....	25 0 0	—	—	82 5 0	0 10 0	Feb. 1879
20000 Llanfyllis, s. t. Llanfyllis.....	4 0 0	2 1/2	2 1/2	0 15 0	0 3 0	Mar. 1878
400 Lisburne, s. t. Cardigan.....	18 15 0	35	30 35	597 10 0	1 0 0	Mar. 1879
9000 Marke Valley, s. t. Llanfyllis.....	5 3 6	1 1/2	1 1/2	7 15 0	0 2 0	Jan. 1876
10000 Mellanor Copper, Hayle.....	2 0 0	3 1/2	3 1/2	0 10 0	0 2 0	Aug. 1879
90000 Minera Mining Co., s. t. Wrexham.....	5 0 0	9 1/2	9 1/2	68 3 2	0 1 6	Aug. 1879
20000 Mining Co. of Ireland, s. t. s. t.	7 0 0	—	—	23 17 0	0 2 6	Jan. 1878
1024 North Bury, s. t. Chacewater.....	1 14 0	—	—	1 0 0	0 8 0	Oct. 1878
11839 North Hendre, s. t. Wales.....	2 10 0	5 1/2	5 1/2	2 17 6	0 8 0	Apr. 1879
8063 Ditto.....	1 0 0	—	—	—	—	—
10000 Ranty Mwyn, s. t. Mold (8794 lbs.)	2 0 0	—	—	0 3 0	0 2 0	Aug. 1878
60000 Pennal, s. t. St. Agnes.....	3 17 6	1 1/2	1 1/2	3 13 6	0 2 0	July 1878
6000 Pennal, s. t. St. Agnes.....	8 0 0	5	4 5	0 10 0	0 8 0	Mar. 1878
45793 Penrith, s. t. c, Gwynedd.....	2 0 0	3 1/2	3 1/2	0 2 8	0 8 0	Nov. 1876
10000 Prince Patrick, s. t. s. t. Holywell.....	1 0 0	1 1/2	1 1/2	0 15 0	0 1 0	July 1879
12000 Ditto, pref. (8000 issued).....	0 10 0	1 1/2	1 1/2	0 1 6	0 8 0	July 1879
10000 Red Hook, s. t. Cardigan.....	2 0 0	2	1 1/2	0 4 0	0 2 0	Jan. 1878
10000 Roman Gravel, s. t. Salop.....	7 10 0	8 1/2	8 1/2	744 10 0	1 0 0	Nov. 1878
612 South Cardigan, s. t. St. Clear.....	1 8 0	55	45 55	5 17 0	0 10 0	Aug. 1879
12000 South Cardigan, s. t. St. Clear.....	6 8 8	11 1/2	11 1/2	0 12 0	0 10 0	Oct. 1878
12000 St. Harmon, s. t. t. Illogan.....	7 12 6	2	1 1/2	38 14 0	0 10 0	Aug. 1879
4500 South W. Frances, s. t. Illogan.....	6 0 0	3 1/2	3 1/2	4 17 0	0 8 0	Dec. 1876
12000 Tankerville, s. t. Salop.....	11 10 0	10	10 12	50 8 0	0 8 0	May 1877
8000 Tanter, s. t. Pool, Illogan.....	4 8 0	16	15 16	24 0 0	0 8 0	July 1879
15000 Van, s. t. Llanfyllis.....	17 5 0	2	1 1/2	55 10 0	0 10 0	Feb. 1878
3000 W. Chiverton, s. t. Perranabuloe.....	1 10 0	—	—	1 19 0	0 10 0	July 1878
1783 West Foidice, s. t. St. Agnes.....	95 10 0	28	26 28	33 0 0	0 10 0	Aug. 1879
412 West Foidice, s. t. St. Agnes.....	29 6 3	5	4 1/2	3 12 0	0 10 0	Oct. 1878
600 West W. Seton, s. t. Camborne.....	51 0 0	10	18 20	446 0 0	0 15 0	Apr. 1878
12000 West W. Valley, s. t. t. Illogan.....	3 0 0	1 1/2	1 1/2	0 12 0	0 3 0	Nov. 1877
1024 Wh. Eliza Consols, s. t. St. Austell.....	18 0 0	—	—	25 10 0	0 10 0	Aug. 1879
9048 Wh. Eliza Consols, s. t. St. Austell.....	5 13 10	1 1/2	1 1/2	8 5 0	0 8 0	July 1876
4298 Wh. Eliza Consols, s. t. St. Austell.....	5 4 6	3 1/2	3 1/2	11 19 0	0 2 6	Dec. 1874
80 Wh. Eliza Consols, s. t. St. Austell.....	173 15 0	22	20 22	522 10 0	0 4 0	Aug. 1872
3000 Wheal Pevor, s. t. Redruth.....	7 11 0	10	10 11	1 12 6	0 10 0	July 1879
10000 Wye Valley, s. t. Montgomery.....	3 0 0	1 1/2	1 1/2	0 10 6	0 8 0	Oct. 1876

FOREIGN DIVIDEND MINES.

Shares.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pd.
35800 Alamos, s. t. Spain.....	2 0 0	1 1/2	1 1/2	1 19 9	0 8 0	Oct. 1878
80000 Alamos, s. t. Spain.....	1 0 0	—	—	0 8 0	0 8 0	May 1876
30000 Australian, s. t. South Australia.....	7 7 6	1 1/2	1 1/2	1 3 6	0 2 0	Aug. 1879
10000 Battle Mountain, s. t. (6240 part pd.)	5 0 0	—	—	0 10 0	0 10 0	Nov. 1872
15000 Bideford, s. t. California.....	4 0 0	—	—	0 14 0	0 2 6	June 1874
30000 Cape Copper Mining, s. t. Africa.....	5 0 0	28 1/2	28 1/2	0 5 0	0 12 6	June 1879
34438 Cedar Creek, s. t. California.....	10 0 0	—	—	0 19 0	0 1 0	June 1878
35000 Cesena Sul. Co., s. t. Romagna, Italy.....	10 0 0	—	—	0 19 0	0 1 0	June 1878
15000 Chicago, s. t. Utah.....	10 0 0	3 1/2	3 1/2	2 8 0	0 4 0	Nov. 1878
65000 Colorado United, s. t. Colorado.....	5 0 0	1 1/2	1 1/2	0 18 6	0 4 0	Jan. 1878
10000 Copiapo, s. t. Chile (250 shares).....	16 15 0	—	—	7 11 5	0 3 0	May 1877
10000 Don Pedro North of the River.....	1 0 0	3 1/2	3 1/2	2 5 0	0 2 0	Mar. 1872
25000 Eberhardt & Aurora, s. t. Nevada.....	10 0 0	2 1/2	1 1/2	1 8 0	0 3 0	Dec. 1877
10000 English & Australian, s. t. St. Austell.....	2 10 0	1 1/2	1 1/2	2 17 0	0 10 0	Mar. 1879
10000 Flanagan, s. t. Utah.....	10 0 0	—	—	4 2 0	0 8 0	July 1878
25000 Flanagan, s. t. Utah.....	2 0 0	4	3 1/2	7 4 1	0 19 0	Apr. 1878
15000 Frontino & Bolivia, s. t. New Granada.....	2 0 0	2 1/2	2 1/2	0 3 6	0 1 0	Feb. 1879
10000 Gold Run, s. t. Id.	1 0 0	—	—	0 2 4	0 4 0	Oct. 1872
15000 Hercules and Roe, s. t. Colo., s. t. Id.	2 0 0	—	—	2 8 0	0 2 0	Jan. 1876
68000 Kapunda Mining Co. Australia.....	1 3 0	—	—	0 2 4	0 8 0	June 1878
30000 Last Chance, s. t. Utah.....	5 0 0	—	—	0 14 0	0 2 0	July 1873
15000 Llanes, s. t. Spain.....	8 0 0	4	3 1/2	17 12 0	0 2 6	Apr. 1879
85000 London and California, s. t. Id.	2 0 0	3 1/2	3 1/2	0 1 0	0 1 0	July 1876
5000 Mamm. Copperopolis of Utah, s. t. Id.	10 0 0	—	—	0 5 0	0 8 0	Dec. 1872
5000 Mountain Chief, s. t. Utah.....	10 0 0	—	—	0 4 0	0 8 0	Jan. 1878
10000 Pontgibaud, s. t. France.....	20 0 0	18	16 18	27 6 0	0 7 6	June 1879
100000 Port Phillip, s. t. (25 sh.).....	1 0 0	3 1/2	3 1/2	1 13 0	0 1 0	Mar. 1879
54000 Richmond Consols, s. t. Nevada.....	5 0 0	7 1/2	7 1/2	7 9 0	0 7 6	Aug. 1879
40000 Santa Barbara, s. t. Brazil.....	0 10 0	1 1/2	1 1/2	0 7 8	0 1 6	May 1879
100000 Scottish Australian Mining Co., s. t. Id.	1 0 0	2	1 1/2	15 per cent.	—	May 1879
80000 Sierra Austral. Mining Co., New	0 10 0	1	1 1/2	15 per cent.	—	May 1879
22500 Sierra Buttes, s. t. California.....	2 0 0	2 1/2	1 1/2	2 0 6	0 1 6	Apr. 1879
40000 S. B. Plumas Eureka.....	2 0 0	2 1/2	2 1/2	2 1 0	0 3 0	Oct. 1878
22500 S. B. Plumas Eureka (25 stock & multiples dealt in)	2 0 0	2 1/2	2 1/2	3 1/2 year 12 1/2 p. c. for June 1879	—	—
20000 Tolima, s. t. S. America.....	5 0 0	—	—	0 11 6	0 8 0	May 1874
25000 Victoria (London), s. t. Australia.....	1 0 0	3 1/2	3 1/2	0 13 1/2	0 7 1/2	July 1879
15000 Western Andes, s. t. New Granada.....	5 0 0	—	—	0 12 0	0 12 0	July 1876
21000 W. Prussian (8500 pref. sh. 101 pd.)	10 0 0	10 1/2	10 1/2	1 10 0	0 4 0	July 1879

NON-DIVIDEND FOREIGN MINES.

Shares.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pd.
12000 Argentine, s. t. Argentina Republic.....	5 0 0	—	—	—	—	—
30000 Buena Vista, s. t. California.....	5 0 0	—	—	—	—	—
10000 Buena Ventura, s. t. Ilano de las Infantas, Spain (25 sh.)	0 15 0	—	—	—	—	—
15000 Canada, s. t. Canada.....	1 0 0	—	—	—	—	—
49938 Chontales, s. t. Nicaragua.....	2 0 0	—	—	—	—	—
75000 Colombian Hydraulic, s. t. Colombia.....	1 0 0	—	—	—	—	—
15000 Comdes of Chile, s. t. Id.	5 0 0	—	—	—	—	—
80000 English Australian, s. t. Victoria.....	1 0 0	—	—	—	—	—
85000 Excelsior Hydraulic Gold Washing Co., California.....	6 0 0	—	—	—	—	—
130000 Exchequer, s. t. California.....	1 0 0	—	—	—	—	—
100000 Fronteno, s. t. Ontario Canada.....	1 0 0	—	—	—	—	—
40000 Holcombe Valley, s. t. California.....	1 0 0	—	—	—	—	—
10000 Hornes, s. t. Id.	10 0 0	—	—	—	—	—
12000 Hultafelt, s. t. Id.	10 0 0	—	—	—	—	—
12000 Hunter Consolidated, s. t. Utah.....	10 0 0	—	—	—	—	—
20000 Imperial Brazilian Collieries, Brazil.....	10 0 0	—	—	—	—	—
7500 Isabelle, s. t. California (250 shares).....	5 0 0	—	—	—	—	—
100000 I. X. L., s. t. California.....	5 0 0	—	—	—	—	—
50000 Javali, s. t. Nicaragua.....	2 0 0	—	—	—	—	—
35000 La Mancha, s. t. Newfoundland.....	10 0 0	—	—	—	—	—
7500 Lusitania, Portugal (25 sh.).....	4 15 0	—	—	—	—	—
12000 Meisenberg, s. t. Germany.....	4 0 0	—	—	—	—	—
9000 Missouri Lead Mining & Smelting, s. t. U.S. pref. (101 sh.)	5 0 0	—	—	—	—	—
4000 New Benberg, s. t. Germany.....	5 0 0	—	—	—	—	—
80000 New Quebrada, s. t. Venezuela.....	5 0 0	—	—	—	—	—
30000 New Zealand Kapanga, s. t. Oromandel.....	5 0 0	—	—	—	—	—
100000 Nouveau Monde, s. t. Venezuela (Société en commandite).....	1 0 0	—	—	—	—	—
30000 Oregon, s. t. Oregon, U.S. (preference shares).....	4 0 0	—	—	—	—	—
50000 Panchillo, s. t. Chile (25000 debentures).....	4 0 0	—	—	—	—	—
90000 Pastorena United, s. t. Italy.....	4 0 0	—	—	—	—	—
25000 Pitaval, s. t. Brazil (incl. 6000 sh. 21 fully paid).....	8 0 0	—	—	—	—	—
25000 Placerville, s. t. California.....	0 8 6	—	—	—	—	—
50000 Providencia and New Rosario, s. t. Mexico.....	2 0 0	—	—	—	—	—
40000 Ravenscroft, s. t. New Zealand; s. t. South Australia.....	1 0 0	—	—	—	—	—
22,181,000 Rio Tinto, s. t. Id.	5 0 0	—	—	—	—	—
100000 Rosa Grande, s. t. Brazil (21 shares).....	73 73 75	—	—	—	—	—
25000 Ruby and Dunderberg, s. t. Nevada.....	1 0 0	—	—	—	—	—
200 Ditto (10 p. c. debentures, convertible at holder's option).....	10 0 0	—	—	—	—	—
30000 Russia Copper, Orenburg and Ufa.....	10 0 0	—	—	—	—	—
32000 Seltzer, s. t. Id.	1 0 0	—	—	—	—	—
10000 Silver Plume, s. t. Colorado.....	1 0 0	—	—	—	—	—
30000 Teocoma, s. t. Utah.....	10 0 0	—	—	—	—	—
43174 United Mexican, s. t. Mexico.....	29 2 9	—	—	—	—	—
14000 Utah, s. t. Id.	5 0 0	—	—	—	—	—
50000 Virneberg, s. t. Rheinbreitbach, Germany.....	2 0 0	—	—	—	—	—
75000 Yorke Peninsula, s. t. South Australia.....	1 0 0	—	—	—	—	—
54500 Yorke Peninsula, s. t. South Australia Preference.....	1 0 0	—	—	—	—	—

* Have made calls since last dividend was paid.

FOREIGN AND MISCELLANEOUS STOCKS, BONDS, LOANS, AND TRUSTS.

Closing Prices		Closing Prices.	
Argentina, 1868 6 percent.....	84 86	Foreign and Col. Gov. Trust, preferred.....	102 104
Bolivia, 6 per cent. Bond Com. Cert.....	92 94	Do., 5 per cent., deferred.....	85 90
Brazilian, 1865, 8 per cent.....	93 94	Do., 6 per cent., 5c issue.....	—
Chilian, 1866, 7 per cent.....	79 81	Do., 1872, 4th issue.....	—
City of Providence, 8 p.c coupon bonds.....	103 105	Do., 1873, 5th issue.....	—
Egyptian Gov. preference.....	12 7 1/2	Peruvian, 1870, 6 per cent.....	13 1/2
Do., unified debt, scrip.....	78 79 1/2	Do., 1872, 5 per cent.....	10 1/2
Do., 7 per cent. V.M.L.....	79 81	Russian, 5 1/2 per cent. L. Mort.....	—
Do., 9 per cent. guar.....	84 86	Spanish, Quinquennial Mort., 5 p. c.....	100 102
Do., K. Daira Sanieh.....	56 5	United States Mort. 6 per cent.....	—